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RHEUMATOID ARTHRITIS

A COMPARATIVE EVALUATION OF THE COMMONLY EMPLOYED DIAGNOSTIC TESTS

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LOUIS DIENES, M.D.
AND
WALTER BAUER, M.D.
BOSTON

In order to follow the course and evaluate therapy in a chronic disease, the need is evident of an objective laboratory test to supplement clinical observation. Diagnostic tests, such as the Wassermann reaction and its modifications, are at hand in the case of syphilis. The basal metabolism is employed as a diagnostic test as well as a therapeutic "measuring stick" of one of the important abnormalities in thyroid disease. The lack of a diagnostic test and a therapeutic "measuring stick" in a chronic disease of unknown etiology characterized by remissions and relapses, such as rheumatoid arthritis,[1] is all too apparent to the student of this disease. Certain "measuring sticks" have been applied from time to time and correlation attempted with the course of the disease. Among the more important in use thus far are the sedimentation rate of the red blood corpuscles, the determination of the number of younger polymorphonuclear leukocytes in the peripheral blood (Arneth-Schilling count and modifications), the Vernes resorcinol test, and the power of the blood serum to agglutinate certain types of streptococci. It is our purpose in this paper to evaluate the accuracy of these four tests in a group of undoubted cases of clinically active rheumatoid arthritis, with simultaneous performance of all four tests in most instances.

In 1703, long before the advent of clinical laboratory methods, the "buffy clot," which from the work of Fahraeus [2] we now know represented the increased sedimentation rate of the red blood corpuscles, was observed in rheumatism by Musgrave.[3] Over 200 years later, in 1924, the first extensive investigation of the sedimentation rate in acute and chronic arthritis was made, by Herrmann.[4] His conclusions have been largely confirmed by all subsequent workers. In brief, the rate was increased in rheumatic fever, gonorrheal arthritis, acute gouty arthritis and rheumatoid arthritis but normal or nearly so in degenerative arthritis [5] and nonarticular rheumatism (myositis, fibrositis, sciatica, lumbago). In rheumatoid arthritis, he found that the rate roughly paralleled the grade and intensity of the disease, was low in burned out cases, was of aid in determining the proper time for joint operations, and was sometimes valuable in diagnosis when few objective signs were present. Herrmann's work was confirmed in the next few years by Kahlmeter,[6] Race [7] and Ditges,[8] while the first report of Dawson, Sia and Boots,[9] in 1930, has resulted in the acceptance of the test by many workers [10] in this country as a valuable aid in the management of cases of arthritis.

The sedimentation rate of the red blood corpuscles is, of course, entirely a nonspecific reaction. It is increased in most infectious diseases, as well as in malignant growths, hepatic jaundice, pregnancy and other noninfectious conditions with tissue destruction. The exact mechanism of its action is not known as yet. Cross experiments have shown that it is a function of the plasma and not of the cells. Increased rates may be related to the changes in the plasma proteins, which have been observed in arthritis and other diseases. Interesting recent work [11] has shown that in rheumatoid arthritis there is a tendency toward a reversal of the normal albumin-globulin ratio, while the fibrinogen is usually increased. Further studies along these lines might aid in elucidating the pathologic physiology concerned.

While there may be a leukocytosis during the acute febrile stage, which often ushers in an atypical attack of rheumatoid arthritis, as a rule the well established case shows a normal or even low white blood count.

The expenses of this investigation were defrayed in part by a grant from the Rockefeller Foundation.

This is publication 21 of the Robert W. Lovett Memorial for the study of crippling disease, Harvard Medical School.

From the Medical Clinic and the Department of Pathology and Bacteriology of the Massachusetts General Hospital and the Department of Medicine, Harvard Medical School.

Owing to lack of space, this article is abbreviated in THE JOURNAL by the omission of table 1, which gives the results of the tests in forty-nine cases. This table will appear in the authors' reprints.

1. Synonyms often employed for rheumatoid arthritis are proliferative arthritis, atrophic arthritis, and chronic infectious arthritis.

2. Fahraeus, R.: The Suspension-Stability of the Blood, Stockholm, P. A. Norstedt and Söner, 1921.

3. Musgrave: Arthritis ex Chlorosi, cited by Jones, R. L.:. Arthritis Deformans, p. 140, Bristol, John Wright & Sons, Ltd., 1909.

4. Herrmann, H.: Die Blutkorperchensenkungsgeschwindigkeit bei Arthritiden und rheumatischen Affektionen der Muskulatur, München. med. Wchnschr. **71**: 1714 (Dec. 5) 1924.

5. Synonyms for degenerative arthritis are hypertrophic arthritis and osteo-arthritis.

6. Kahlmeter, G.: Ueber die Bedeutung der Fåhreusschen Senkungsreaktion bei akuten und chronischen Arthritiden, Klin. Wchnschr. **5**: 889 (May 14) 1926.

7. Race, J.: The Suspension Stability Test in Rheumatoid Diseases, Proc. Roy. Soc. Med. (Sect. Balneol. & Climatol.) **22**: 15 (March) 1929.

8. Ditges, H. J.: Senkungsreaktion und weisses Blutbild bei rheumatischen Erkrankungen, Deutsche med. Wchnschr. **55**: 1171 (July 12) 1929.

9. Dawson, M. H.; Sia, R. H. P., and Boots, R. H.: The Differential Diagnosis of Rheumatoid and Oste-Arthritis: The Sedimentation Reaction and Its Value, J. Lab. & Clin. Med. **15**: 1065 (Aug.) 1930.

10. Weiss, Arthur: The Prognostic Value of the Sedimentation Rate in Arthritis: A Modification of the Technic, Am. J. M. Sc. **181**: 379 (March) 1931. Kling, D. H.: Sedimentation Rate of Blood Corpuscles in Synovial Fluid and in Plasma: Method of Estimation and Significance in Arthritis, Arch. Int. Med. **50**: 419 (Sept.) 1932. Stainsby, W. J., and Nicholls, E. E.: The Clinical Significance of the Erythrocytic Sedimentation Test in Rheumatoid Arthritis, J. Clin. Investigation **12**: 1041 (Nov.) 1933. Oppel, T. W.; Myers, W. K., and Keefer, C. S.: The Sedimentation Rate of the Red Blood Cells in Various Types of Arthritis, ibid. **12**: 291 (March) 1933. Rawls, W. B.; Gruskin, B. J.; Ressa, A. A., and Jordon, Marie: The Sedimentation Rate and Polymorphonuclear Count in Rheumatoid and Mixed Arthritis, J. Lab. & Clin. Med. **19**: 830 (May) 1934. Steinberg, C. L.: The Schilling Count in Fifty-Nine Cases of Chronic Arthritis with a Correlated Sedimentation Rate in Thirty Cases, Am. J. M. Sc. **190**: 98 (July) 1935.

11. Aldred-Brown, G. R. P., and Munro, J. M. H.: The Plasma Proteins and Nonprotein Nitrogen, and the Sedimentation Rate, in Chronic Rheumatic Disorders, Quart. J. Med. **4**: 269 (July) 1935. Davis, J. S., Jr.: Protein Studies in Atrophic (Rheumatoid) and Hypertrophic Arthritis, J. Lab. & Clin. Med. **21**: 478 (Feb.) 1936.

Similarly, a polymorphonucleosis may be present in the early stages, leading later even to a neutropenia with an increase in the number of the lymphocytes. Thus both the white blood cell count and the routine (Ehrlich) differential leukocyte counts are of little assistance in following the course of the disease. On the other hand, the presence of young polymorphonuclear leukocytes in the peripheral blood has been quite constantly observed in rheumatoid arthritis since the work of Ditges [8] in 1929, and in consequence Schilling, or filament-nonfilament leukocyte, counts have been utilized in recent years by various British and American workers.[12]

TABLE 2.—*Summary of All Tests Done on Patients with Rheumatoid Arthritis*

	No. of Patients	No. of Tests	Positive	Percentage
Sedimentation rate	49	154	142	92.2
Vernes test	49	139	81	58.3
Schilling count	35	100	87	87.0
Agglutination*	47	130	69	53.1
with C_{17}	47	130	45	34.6
with NY_5	47	130	32	24.6
with RB_5	44	105	31	28.6
with AB_{13}	45	105	21	20.0

* Meaning that any one of four streptococcus agglutination reactions was positive.

While no final conclusions can yet be drawn, this test is usually positive in cases of clinically active rheumatoid arthritis. Again, we are dealing with a nonspecific test, representing a bone marrow response, found in many infectious and noninfectious conditions.

The Vernes resorcinol test is relatively unfamiliar in this country but has been quite extensively used in France in charting the activity of various diseases. In the United States, its use in tuberculosis was suggested in 1927 by Baylis,[13] who in the following year published the description of a simplified method.[14] Briefly, this consisted in mixing 0.5 cc. of a 1.25 per cent aqueous solution of resorcinol with an equal quantity of the patient's serum and allowing the mixture to stand over night in the refrigerator. The degree of turbidity observed supposedly represents an approximation of the clinical activity of the disease. In 1931 Coste, Lacapère and Rapaport [15] applied the Vernes test to the study of arthritis. Other French authors [16] agree that the test is of real value, with most cases of rheumatoid arthritis showing abnormal readings. Again the test is entirely nonspecific, since it is positive in tuberculosis, syphilis and other infections as well as in malignant conditions. The mechanism of the reaction is unknown. It is probably related to the precipitability of plasma proteins by electrolytes, with fibrinogen eliminated, since serum, not plasma, is used.

12. Hill, L. C.: Observations on Polynuclear Count in Rheumatic Disease, Acta rheumatol. **3:** 6 (Sept.) 1931. Eaton, E. R.: Chronic Arthritis: Report Based on Study of Blood Cell Count in 250 Cases, J. Am. Inst. Homeop. **25:** 125 (Feb.) 1932. Steinberg, C. L.: The Schilling Differential in Infectious and in Hypertrophic (Degenerative) Arthritis, J. Missouri M. A. **30:** 485 (Dec.) 1933. Steinbrocker, Otto, and Hartung, E. F.: The Filament-Nonfilament Count in Chronic Arthritis: An Aid in Differentiation of Rheumatoid Arthritis and Osteo-Arthritis, J. A. M. A. **100:** 654 (March 4) 1933. Collins, D. H.: The Neutrophil Nuclear Count in Chronic Rheumatism, with Special Reference to Osteo-Arthritis of the Hip, Acta rheumatol. **8:** 3 (Feb.) 1936. Rawls, Gruskin, Ressa and Jordon.[10] Steinberg.[10]

13. Baylis, A. B.: The Vernes Test for Tuberculosis, Am. Rev. Tuberc. **15:** 500 (April) 1927.

14. Baylis, A. B.: The Vernes Flocculation Test for Tuberculosis: Results of 250 Cases, Am. Rev. Tuberc. **18:** 513 (Oct.) 1928.

15. Coste, F.; Lacapère, J., and Rapaport, N.: La réaction de floculation à la résorcine (réaction de Vernes) dans le rhumatisme subaigu ou chronique, Compt. rend. Soc. de biol. **106:** 424 (Feb. 20) 1931.

16. Lacapère, J., and Fénal, B.: Comparison de la réaction de Vernes à la résorcine et de la vitesse de sédimentation des hématies dans 93 cas de "rhumatisme," Arch. Inst. prophylac. **6:** 38, 1934.

In 1930 Cecil, Nicholls and Stainsby [17] reported that hemolytic streptococci recovered from the blood and synovial fluid of patients with rheumatoid arthritis were uniformly agglutinated to a high titer in the serums obtained from patients with rheumatoid arthritis. Further work disclosed that hemolytic streptococci obtained from patients with other infectious diseases would give similar reactions. Nearly all normal and pathologic control serums were negative and other organisms failed to be agglutinated in arthritic serums. Dawson, Olmstead and Boots [18] (along with other American workers [19]) have confirmed these observations and have disclosed in addition that the R pneumococcus will give similar positive results. The agglutination reaction is usually negative in children or in the first six months of the disease in adults, increases in intensity as the disease develops, and may disappear with recovery. In Cecil's original paper, the test was compared to the Widal reaction in typhoid, as specific and reliable in the diagnosis of rheumatoid arthritis. Later studies have disclosed less uniform results, although Dawson, Olmstead and Jost's [20] finding of precipitins to carbohydrate and protein fractions of the streptococcus in the serums of patients with rheumatoid arthritis may be considered as evidence favoring the claim of specificity. In contrast, then, to the three measuring sticks previously described, which are admittedly nonspecific, in this case we may be dealing either with a specific diagnostic test without etiologic significance (like the Weil-Felix and Wassermann reactions) or even one concerned with the causative organism.

METHODS

The group of patients studied numbered forty-nine. They all fulfilled the diagnostic criteria of rheumatoid arthritis in an active stage, patients with hypertrophic arthritis alone, gonorrheal arthritis and gout being carefully excluded. The majority of these patients have been followed since the initial period of observation, some for as long as four years. This enabled us to be

TABLE 3.—*Relationship to Duration of Disease*

	Less Than One Year		One Year or More	
	No. of Tests	Percentage Positive	No. of Tests	Percentage Positive
Sedimentation rate	39	79	115	96
Vernes test	39	54	100	59
Schilling count	26	65	74	93
Agglutination*	32	47	98	55
with C_{17}	32	16	98	41
with NY_5	32	9	98	29
with RB_5	28	32	77	27
with AB_{13}	27	11	78	22

* One of four strains positive.

absolutely certain of the initial diagnosis, as well as to exclude a few patients who were believed perhaps to be in the prodromal stage of rheumatoid arthritis but

17. Cecil, R. L.; Nicholls, E. E., and Stainsby, W. J.: Etiology of Rheumatoid Arthritis, Tr. A. M. Phys. **45:** 210, 1930.

18. Dawson, M. H.; Olmstead, Miriam, and Boots, R. H.: Agglutination Reactions in Rheumatoid Arthritis: I. Agglutination Reactions with Streptococcus Haemolyticus, J. Immunol. **23:** 187 (Sept.) 1932.

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who never developed actual joint changes. On the selected group of patients fulfilling these requirements, 156 sedimentation tests, 141 Vernes tests, 102 Schilling counts and 132 streptococcus agglutination reactions (with four strains) were performed. Over half the patients were tested more than once, and many were followed at intervals of from four to six weeks for six months or more.

The patients along with the results of the various tests are listed in table 1. The extent of involvement and the degree of activity as well as the total severity were graded in each case at the time the tests were

TABLE 4.—*Percentages of Instances When One Test Was Positive and Another Negative*

		Test Negative			
		Sedimentation Rate	Vernes Test	Schilling Count	Streptococcus Agglutination Reaction
Percentage of tests positive	Sedimentation rate.....	..	36	10	37
	Vernes test.....	5	..	10	21
	Schilling count.....	8	40	..	35
	Streptococcus agglutination reaction.....	4	18	4	..

performed. The subsequent fate of each patient is noted, with the duration of follow-up.

Sedimentation tests were done according to the method described by Rourke and Ernstene.[21] In this method the factor of dilution is done away with by the use of heparin as an anticoagulant, venous stasis is avoided, and the tests are performed within three hours at room temperature (20-25 C.). The rate is measured during the period of most rapid settling and expressed in millimeters per minute. Readings of the distance the cells have fallen at the end of an hour or every fifteen minutes as employed in other methods are influenced by the packing of cells during the latter part of the period and by aggregation in the first part. Finally, the hematocrit is determined and correction made for the cell volume percentage of each specimen. In this way, false positives resulting from anemia are avoided. Any method which fails to correct for this anemia factor is subject to error and therefore is not to be relied on. We chose to use this method because along with other workers,[22] we believed it less subject to inaccuracy than the older methods employed. Vernes resorcinol tests were performed according to the modified method of Baylis,[14] as described. Doubtful readings, listed as ±, were considered negative. Differential counts were done according to Schilling's[23] modification of Arneth's method. Band forms, juveniles and myelocytes were lumped together and the percentage of total polymorphonuclear leukocytes was reckoned. A count of young cells of over 8 per cent was considered a positive Schilling test. Agglutination reactions were performed following the methods described by Dawson and his co-workers.[18] Dilutions of the serum were not carried out beyond 1:320, because previous work seemed to show no consistent correlation between the agglutination titer and the clinical status of the patient. Readings were carefully made by two observers, with results declared positive only when definite agglutination was present. Serums agglutinating the organisms in a titer of 1:160 or over were considered positive, but only if the reactions in lower dilutions were stronger. In most cases, four strains of hemolytic streptococci were used, one (AB_{13}) a "typical" strain of Cecil's, recovered from a patient with rheumatoid arthritis, the others from nonarthritic patients. NY_5 was isolated from a patient with scarlet fever, and C_{17} and RB_5 from patients with rheumatic fever. In figuring the results, if one of the four strains showed agglutination in a dilution of 1:160 or over, the test was considered positive.

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23. Schilling, Victor: The Blood Picture and Its Clinical Significance (Including Tropical Diseases): A Guidebook on the Microscopy of Blood, translated and edited by R. B. H. Gradwohl, St. Louis, C. V. Mosby Company, 1929.

RESULTS

In table 2 are shown the results obtained with each test. It will be noted that the sedimentation rate and the Schilling count show a high degree of correlation, with the former slightly ahead. In contrast, the Vernes test and the agglutination reaction are positive in only slightly over 50 per cent of these active cases of rheumatoid arthritis. In the case of the agglutination reaction, if we take each strain separately, results varying from 20 per cent (AB_{13}) to 34.6 per cent (C_{17}) are present. It is evident then that, as far as the diagnosis of activity goes, both sedimentation rate and Schilling count are far superior to the other two tests.

We have mentioned that the agglutination reaction has usually been found negative in the first six months of the disease.[24] Dawson, Olmstead and Boots[18] also found a definite relationship between the duration of the disease and the agglutination titer of the serum and that patients having had the disease under a year showed positive agglutination tests in only 33 per cent compared to 71 per cent positive in the group of longer duration. Table 3 shows a similar analysis of our figures. We find only a slight difference between the two groups in the case of the Vernes test and the agglutination reaction. On the other hand, a marked difference is seen in the sedimentation rate, the Schilling count, and in agglutination of three of the streptococcus strains when considered separately (C_{17}, NY_5 and AB_{13}). However, it must be remembered that any conclusions drawn from these figures may be misleading, since the first group was much smaller than the second. Furthermore, the first group contained fewer advanced cases. The majority of the first group were often tending to go into a remission following the initial attack. As regards the patients' age, we agree with Nicholls and Stainsby that there is not sufficient correlation with the results of the agglutination reactions to enable us to rule out other variables. The same is true of the other three tests.

TABLE 5.—*Relationship to Severity*

	Severity	Patients	Tests	Positive	Percentage
Sedimentation rate....	Mild.....	11	39	33	85
	Moderate and severe	38	115	109	95
Vernes test.....	Mild.....	11	35	11	31
	Moderate and severe	38	104	70	67
Schilling count.....	Mild.....	7	26	22	85
	Moderate and severe	28	74	65	88
Streptococcus agglutination reaction.....	Mild.....	11	33	18	55
	Moderate and severe	36	97	51	53

24. Nicholls, E. E., and Stainsby, W. J.: Further Studies on the Agglutination Reaction in Chronic Arthritis, J. Clin. Investigation **12**: 505 (May) 1933.

As might be expected, only the sedimentation rate and Schilling count show any degree of agreement. In ninety-six instances in which the two tests were performed simultaneously on thirty-six patients, they agreed in eighty cases, or 83 per cent. When the other tests are similarly compared, agreement is seen only about 50 per cent of the time. Table 4 shows in percentage figures the proportion of instances when one test was diagnostic, i. e., positive, while the other was negative. Again, the sedimentation rate and Schilling count are superior, being incorrect in 10 per cent or less, while, if the Vernes test and agglutination reaction are compared with the other two, we find them excelled in 35 per cent or more instances.

In table 5 we have attempted to divide the cases into two groups, the first with few objective changes and a relatively mild involvement and the second representing a more severe type of the disease, with many joints affected and often with ankylosis and deformity. In this, the agglutination reaction and Schilling counts show little difference in the two groups, while the sedimentation rate shows a slightly greater percentage of positive reactions in the second group and the Vernes test a marked difference.

A small number of cases of other types of arthritis were incidentally tested in the course of the study but have not been included in the tables. In these, the sedimentation rate was increased in two cases of acute gouty arthritis, five cases of gonorrheal arthritis and in over 50 per cent of tests performed on seven patients with hypertrophic arthritis, with the Vernes and Schilling tests showing a similar but lower number of positives. The agglutination reaction was positive in gout in one out of four tests, in gonorrheal arthritis in two out of six tests and in hypertrophic arthritis in two out of four. Results in so few tests are of course inconclusive but do point toward the nonspecificity of all four tests.

COMMENT

In general, agreement is reported by other workers, as far as the reliability of the sedimentation rate is concerned. All disclose either 90 per cent or over of their cases of definite rheumatoid arthritis with increased sedimentation rate or, when actual figures are not given, uniform agreement of this test with the clinical diagnosis. In respect to Schilling or filament-nonfilament counts, conclusions are not unanimous, with results ranging from 52 per cent,[22] 68 per cent,[25] 78 per cent [26] and 91 per cent [27] to 100 per cent.[28] In one large series,[27] the figures are rendered less valuable by the nondifferentiation of cases of rheumatoid and hypertrophic arthritis. The French workers [29] state that the Vernes test is of distinct value but give no actual percentages. In regard to the agglutination reaction, there is an interesting shift in the reported results. The first reports by Cecil, Nicholls and Stainsby [17] showed nearly 100 per cent agglutinability of "typical" strains by serums from patients with rheumatoid arthritis. The analysis of the figures given in later articles shows a much lower degree of positivity (Dawson [18] 67 per cent, Nicholls and Stainsby [24] about 40 per cent, Keefer [19] 54.5 per cent, Cox and Hill [19] 70 per cent, Blair and Hallman [19] 84 per cent). The majority of the reported series approach more closely our figures (53.1 per cent). It must be remembered, however, that this percentage (53.1) in many instances applies to patients with serums agglutinating only one strain out of four. As shown in table 2, if the strains are considered separately, results from 20 to 34.6 per cent are obtained, with AB_{13} (a "typical" strain of Cecil) lowest of all. We find a constant agreement, then, only in the case of the sedimentation rate.

TABLE 6.—*Results of Tests in Six Cases*

M. G. H. Arthritic Series* Number	Age, Years	Duration	Test	Date	Sedimentation Rate	Vernes Test	Schilling Count	Streptococcus Agglutination Reaction Dilution Positive: Strain C_{17}	Strain NY_5	Strain RB_5	Strain AB_{13}
48	47	18 mos.	41	2/ 5/32	0.50	++	..	—	—	320	—
			42	3/ 1/32	0.55	—	..	—	320	20	320
			43	5/ 6/32	1.00	—	10	—	—	320	—
125	63	4 mos.	69	12/18/31	1.70	+	..	—	—	..	..
			70	2/ 5/32	0.36	±	24	—	20	320	—
			71	3/18/32	0.42	±	16	—	—	40	—
			72	4/29/32	0.72	—	22	160	—	—	—
181	24	2½ yrs.	103	1/14/32	0.99	±	22	20	20	20	20
			104	2/19/32	0.70	—	10	320	80	320	20
			105	3/18/32	0.90	—	20	320	320	—	320
			106	4/ 8/32	1.18	±	..	320	320	20	320
			107	5/13/32	0.85	—	10	320	320	80	—
			108	6/10/32	0.85	±	12	320	320	—	—
175	46	6 yrs.	96	12/18/31	1.50	++	..	..	..	..	..
			97	1/ 8/32	0.90	—	13	20	20	20	—
			98	2/19/32	1.10	±	17	—	—	20	—
			99	3/11/32	1.33	+	11	20	—	—	—
			100	4/ 1/32	1.50	..	17	..	..	..	..
			101	5/13/32	1.14	+	..	—	—	—	—
182	42	2 yrs.	111	2/12/32	0.85	—	..	320	320	..	..
			112	3/11/32	0.86	++	..	320	320	20	20
			113	4/15/32	1.00	—	31	80	20	20	40
			114	5/20/32	1.05	+++	20	80	80	40	20
195	59	19 yrs.	123	12/18/31	0.48	+	..	—	—	—	320
			124	1/ 8/32	0.63	—	37	—	—	..	..
			125	4/22/32	0.79	—	22	—	—	320	—
			126	6/10/32	0.80	+++	30	—	—	320	20

* The majority of these patients with rheumatoid arthritis have been studied in great detail and have been followed in a special follow-up clinic since they first came under observation. The case number refers to the Massachusetts General Hospital rheumatoid arthritic series and will be employed in all subsequent reports pertaining to the detailed analysis of the statistical data collected on this group of patients since 1930.

25. Rawls, Gruskin, Ressa and Jordon.[10]
26. Steinberg.[10]
27. Eaton.[12]
28. Steinbrocker and Hartung.[12]
29. Coste, Lacapère and Rapaport.[15] Lacapère and Féual.[10]

There are a number of articles in the literature in which one of these tests is compared with another in a group of patients with rheumatoid arthritis. Ditges [8] found seven cases out of thirty-seven in which the sedimentation rate was abnormal but without an associated increase in young polymorphonuclear leukocytes, an agreement of 81 per cent. In 210 simultaneous determinations done on fifty patients, Rawls and his co-workers [10] found the two tests erring equally and agreeing in 77 per cent. Steinberg,[10] in a smaller series, on thirty patients, concluded that the sedimentation rate was more accurate, with twenty-nine tests positive, while the Schilling count was increased in twenty-two instances. Agreement was seen in 78 per cent. Our own figures give the sedimentation reaction a slight advantage (92.2 to 87 per cent) and show agreement between the two tests in seventy-nine out of ninety-six tests, or 83 per cent. It would seem then that, although there is some variation in opinions expressed and figures given as to the value of the Schilling count when used alone, the results of direct comparison, with which our conclusions agree in the main, would place it nearly on a par with the sedimentation rate.

There are a few reports of simultaneous determinations of the Vernes test and sedimentation rate. One French author [30] believes that the former is less sensitive than the latter and does not always coincide. Others [16] have found no especial parallelism and agreement in about two thirds of the cases. There is a suggestion then of corroboration of our finding that the Vernes reaction is far inferior (less than 60 per cent) to the sedimentation rate. We can find no reports of comparison between the Schilling count and the Vernes reaction. Again, the streptococcus agglutination reactions have been compared with other tests only twice—each time with respect to the sedimentation rate. Both Stainsby and Nicholls [10] and Dawson, Olmstead and Boots [18] state that the reactions are entirely unrelated. This is corroborated by our figures in regard not only to the sedimentation rate but also to the other two tests. In every case, agreement is present in 60 per cent or less, including the comparison with the Vernes reaction, an entirely nonspecific test but one showing a very similar percentage of positive tests in this group of patients with active rheumatoid arthritis.

Until the etiology of rheumatoid arthritis is known, the question of the specificity of the agglutination reaction will not be settled. Results with normal and pathologic control serums would show that when positive it approaches a diagnostic test, although certain exceptions render the distinction not entirely clear cut. The variations in agglutination titer in one patient in a comparatively brief time, not accounted for at present by clinical developments, may be seen in table 6 (excerpted from table 1). Patients 48, 125 and 181 all show wide swings from negative (1:80 or below) agglutination titers to positive in periods of a month or less. This unreliability has been brought out in Nicholls and Stainsby's paper [24] and by Cox and Hill.[19] This variation is shared by the Vernes reaction (see patients 175, 182 and 195 in table 6), while the sedimentation rates and Schilling counts tend to remain relatively constant. The finding by Tillet and Abernethy [31] of nonspecific agglutinins for hemolytic streptococci (not heat killed but incubated at 37 C.) in various infections is suggestive that the suspension stability of this organism may respond, like the red blood cells, to changes in the plasma proteins. At any rate, when we employ the agglutination reaction as a test for the presence of active rheumatoid arthritis we find that it is easily surpassed by two and equaled by one of three admittedly nonspecific reactions.

Which of the four tests are of practical value for the clinician and really useful in following the disease? We believe at present that the agglutination reaction, while it may be of definite value in the investigation of this disease, both from difficulty of technic and from lack of uniformity of results, is not indicated in the routine study and treatment of patients with rheumatoid arthritis. The Vernes test, although simple in performance, suffers from relative inaccuracy (at least as shown by our results), and the degree of turbidity must be approximated unless a photometer is used. Results in the literature would indicate even more than our figures that the sedimentation rate is superior to the Schilling count. The latter, in addition, does involve a more laborious technic than the sedimentation rate, which should be further simplified and improved when photographic methods [32] are perfected. In doubtful cases, in which the sedimentation rate is negative, the performance of a Schilling count in addition might be of diagnostic significance.

In our later experience we have employed the sedimentation rate alone as the best "measuring stick" of active disease in the case of rheumatoid arthritis. In several thousand tests on all types of joint disease, we have found it entirely nonspecific but a valuable laboratory guide. We hope to report this large series of results in a subsequent paper.

SUMMARY AND CONCLUSIONS

1. On a group of forty-nine patients with active rheumatoid arthritis, four commonly employed "measuring sticks" were evaluated.

2. The sedimentation rate was found positive in 92.2 per cent of the tests, with the Schilling count only slightly less accurate (87 per cent). The Vernes test and streptococcus agglutination reactions were positive in approximately 50 per cent (58.3 and 53.1 respectively).

3. In cases of a year's duration or under, the sedimentation rate and the Schilling count were positive less often than in cases of longer duration. The other two tests showed approximately similar results in each group.

4. The sedimentation rate was slightly more accurate in severe than in mild cases. The Vernes test was markedly so, while the other two showed little difference.

5. Our results agree in the main with those reported in the literature.

6. From the standpoint of practicability and accuracy, the sedimentation rate is the most useful laboratory test thus far in common use to aid in the recognition and evaluation of patients with active rheumatoid arthritis.

30. Coste, F.: Sur la réaction à la résorcine de Vernes dans le rhumatisme chronique, Paris méd. **2:** 544 (Dec. 26) 1931.
31. Tillett, W. S., and Abernethy, T. J.: Serological Reactions with Hemolytic Streptococci in Acute Bacterial Infections, Bull. Johns Hopkins Hosp. **50:** 270 (April) 1932.
32. Sulkowitch, H. W.: A Photographic Suspension Stability (Sedimentation Rate) Apparatus: A Preliminary Report, Am. J. M. Sc. **187:** 85 (Jan.) 1934.

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THE TREATMENT OF HEART DISEASE COMPLICATING PREGNANCY

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That the heart output increases during pregnancy has been demonstrated in both animals and the human being.[1] In a normal pregnancy the cardiac output begins to increase at about the fourth month, from which time on there is a steady rise until term is reached. This increase in cardiac output during normal gestation, expressed in terms of volume of blood passing through the heart in unit time, is approximately 50 per cent. Following delivery the minute volume slowly returns to normal, reaching its nonpregnant level within four weeks. Unfortunately, as yet, we are ignorant of the cardiac output or work during the period of labor, although there is reason to believe that it is further augmented during parturition.

It is evident that such a marked increase in the minute volume of the heart during gestation must be of

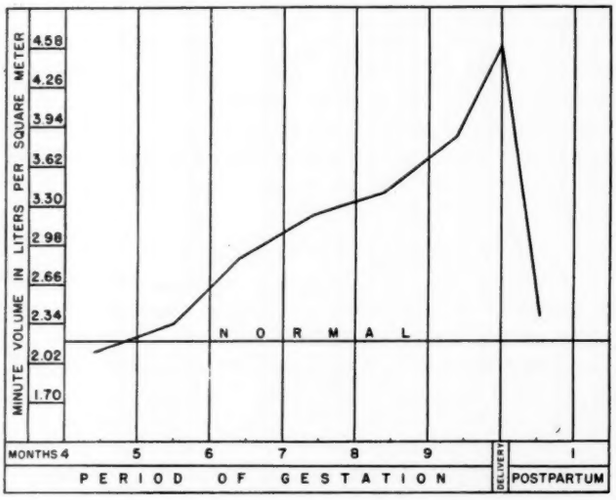

Chart 1.—Average cardiac output during normal pregnancy.

the utmost importance in patients suffering from some cardiac disturbance. This additional work placed on the heart as a result of pregnancy and labor may be more of a strain than the diseased organ can stand, and the outcome may be, and often is, heart failure resulting in death. The proper care of a pregnant patient with heart disease is one that taxes the best judgment of the obstetrician, and whenever possible he should have the cooperation of a well trained cardiologist or internist.

In order that pregnant patients suffering from cardiac involvement may obtain the best possible care during the antepartum period, the Lying-in Hospital maintains an antepartum and postpartum cardiac clinic, manned by the departments of obstetrics and medicine of the New York Hospital, of which the Lying-in Hospital is an integral part. The patients attending this cardiac clinic are seen and examined by both the obstetrician and the cardiologist at frequent intervals throughout the antepartum period. The details of treatment and hospitalization will be discussed later.

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A study of 563 hospital discharges, representing 418 pregnant patients suffering from cardiac disease and cared for in the Lying-in Hospital during the period Sept. 1, 1932, to Dec. 31, 1936, is the basis for this paper.

INCIDENCE

During the period studied, four and one-third years, there were 14,157 obstetric patients discharged from the hospital, and of this number 563 were discharged with the diagnosis of cardiac disease, an incidence of 3.97 per cent. As stated in a previous publication,[2] we are convinced that more importance should be placed on cardiac disease as a complication of pregnancy, especially because of this high incidence of about four in every hundred gravid women and because of the effect pregnancy has on this complication.

MORTALITY

In table 2 we present the maternal and infantile mortality in the group of cardiac patients, as compared to the mortality rates for all the patients in the Lying-in Hospital during the period studied, and labeled in the table as "total clinic patients," a term we use in subsequent analyses, with identical meaning. It will be observed that the maternal death rate in the cardiac group is more than twice as high as in the group of "total clinic patients," being 7.1 per thousand in the former and 2.8 per thousand in the latter. The infantile mortality remains approximately the same in the two groups. It should be noted that we consider the term "infantile mortality" to include all stillborn and deadborn infants weighing more than 1,500 Gm. as well as those babies dying during the first two weeks following birth.

The types of cardiac lesion encountered are shown in table 3. Patients suffering from mitral stenosis and insufficiency constitute more than 40 per cent of all cardiac patients, while approximately 20 per cent have both mitral and aortic lesions. Mitral stenosis alone accounts for 18 per cent of the cases, and aortic lesions for only 1.44 per cent. It is interesting that only two, or 0.48 per cent, of the 418 patients had definite congenital heart lesions. From this table it is clear, as Carr and Hamilton[3] have pointed out, that rheumatic heart disease accounts for about 90 per cent of the cases.

Although we have been hesitant[2] to adopt the functional classification of heart disease, it has now become with us an established method of studying heart disease in pregnancy. The reason for this is that by experience we have found that this classification is of greater value in the evaluation of the cardiac involvement and thus a better aid in prognosis than the old anatomic classification, as used in table 3. This classification of the New York Heart Association is based on the functional capacity of the heart and is as follows:

Class 1. Patients with organic heart disease able to carry on ordinary physical activity without discomfort. Ordinary physical activity does not cause undue fatigue, palpitation, dyspnea or chest pain. Patients in this class do not show physical signs of cardiac insufficiency and rarely signs of active heart infection.

Class 2. Patients with organic heart disease unable to carry on ordinary physical activity without discomfort.

(*a*) Activity slightly limited. Ordinary physical activity causes undue fatigue, palpitation, dyspnea or chest pain. Patients in this class rarely show physical signs of cardiac insufficiency or signs of active heart infection.

2. Stander, H. J.: Cardiac Disease in Pregnancy, Am. J. Obst. & Gynec. **27**: 528 (April) 1934.

3. Carr, F. B., and Hamilton, B. E.: Five Hundred Women with Serious Heart Disease Followed Through Pregnancy and Delivery, Am. J. Obst. & Gynec. **26**: 824 (Dec.) 1933.

(*b*) Activity greatly limited. Less than ordinary physical activity causes fatigue, palpitation, dyspnea or chest pain. Patients in this class usually show one or more physical signs of cardiac insufficiency or the anginal syndrome or signs of active heart infection.

Class 3. Patients with organic heart disease and with symptoms or signs of cardiac insufficiency, at rest, unable to carry on any physical activity without discomfort. There is fatigue, palpitation, dyspnea or chest pain at rest. Patients in this class show marked physical signs of cardiac insufficiency or the anginal syndrome, or signs of active heart infection.

TABLE 1.—*Cardiac Disease in 14,157 Obstetric Patients Discharged*

Type of Discharge	Total Clinic Discharges	Discharges with Cardiac Disease	
		Number	Per Cent
Abortions	759	32	4.21
Full term and premature deliveries	11,246	386	3.43
Discharged before delivery	1,822	136	7.46
Died undelivered	9	5	55.55
All other discharges	321	4	1.24
Total	14,157	563	3.97

TABLE 2.—*Incidence of Maternal Mortality Due to Cardiac Disease and Infantile Mortality in Cardiac Disease*

	In Total Clinic Patients	In Cardiac Patients
Maternal mortality	0.28%	0.71%
Infantile mortality	4.24%	3.84%

It will be seen that class 2 cardiac patients, i. e., those with organic heart disease who are unable to carry on their ordinary activity without discomfort, but not with symptoms or signs of cardiac insufficiency at rest, are further subdivided into two groups, 2 *a* and 2 *b*. The former subgroup rarely reveals physical signs of cardiac insufficiency or infection and in general is able to go through pregnancy and even labor without untoward developments, provided careful supervision is employed. Class 2 *b* cardiac patients, on the other hand, generally show signs of cardiac insufficiency and may readily become decompensated. It is because of this serious possibility that we prefer to regard class 2 *b* as clinically similar to the definite class 3 group, in which are the patients with cardiac insufficiency at rest, and in the part of this paper dealing with treatment we shall discuss the class 2 *b* and class 3 in one group. This, we believe, is to the best interests of the patient.

In table 4 we have grouped the 418 cardiac patients according to this functional classification. Unfortunately the hospital records are not clear enough on 151 of these patients to permit a definite grouping, and we have therefore thought that it would give a more correct index of incidence to list separately the 267 patients in whom the classification was definite and well established. In this group we find that class 1 accounts for 51.69 per cent, class 2*a* for 34.46 per cent, class 2*b* for 11.98 per cent, and class 3 for 1.87 per cent. Fortunately, therefore, the majority of our cardiac patients, i. e., over 86 per cent, fall into classes 1 and 2*a*, the two mild types, and only about 14 per cent belong in the severe types, classes 2*b* and 3. Of the four women who died as a result of heart disease in our group of 418 patients, two definitely belonged to class 3, and the other two probably belonged in class 2*b*.

A definite history of either rheumatic or scarlet fever, chorea or frequent sore throat was reported in 58.4 per cent of the 387 cardiac patients, and from only slightly more than 40 per cent were we unable to elicit such a history. It is apparent, therefore, of what great significance a careful past history becomes in the routine care of all pregnant women.

In table 6 we give the type of delivery in the cardiac patients. Approximately 8 per cent of these patients had an abortion, by which we indicate delivery prior to viability, or of a fetus weighing less than 1,500 Gm. Of the remaining 386 cardiac patients, 69.1 per cent had spontaneous deliveries and 30.9 per cent an operative type of delivery.

As many of the operative deliveries, shown in table 6, were not performed because of the cardiac disease, we have constructed table 7, which is an analysis of all types of intervention or operative delivery done because of the heart disease. This shows that, for this indication, about 3 per cent had a therapeutic abortion, 4 per cent cesarean section and 12 per cent forceps delivery. It may be said then that, in one out of every five pregnant women suffering from cardiac disease, interruption of the pregnancy or operative delivery becomes the procedure of choice.

The last table (table 8) is a comparison of the maternal deaths from cardiac disease and those from the other common causes in our clinic during each year from 1932 to 1936 inclusive. The comparison is most instructive, since it places cardiac disease as one of the most important causes of maternal mortality, contrary to the usual teaching. The clinic population in our hospital is not a selected group but is made up of both registered and unregistered patients, of all types and races; i. e., a fair representation of a cross-section of the city population.

Cardiac disease accounted for 10 per cent of all uncorrected maternal deaths in our total indoor and outdoor obstetric service during a four and one-third year period. The total uncorrected maternal mortality, including abortions and ectopic pregnancies, in this combined service is 2.251 per thousand patients discharged, or 2.324 per thousand live births.

TABLE 3.—*Type of Cardiac Lesion (Abortions, Full Term and Premature Deliveries)*

Lesion	Number of Cases	Per Cent of Total
Mitral stenosis and insufficiency	175	41.87
Mitral stenosis and insufficiency + aortic lesion	35	8.37
Mitral stenosis or insufficiency + aortic lesion	53	12.68
Mitral stenosis	76	18.18
Aortic lesion	6	1.44
Chronic valvular disease (no further diagnosis)	21	5.02
Congenital lesion	2	0.48
Other types of cardiac disease	50	11.96
Total	418	100.00

TABLE 4.—*Functional Classification of Cardiac Disease (Abortions, Full Term and Premature Deliveries)*

Type	Cases	Per Cent Total	Per Cent of Classified
Class 1	138	33.01	51.69
Class 2*a*	92	22.01	34.46
Class 2*b*	32	7.66	11.98
Class 3	5	1.20	1.87
Total classified	267	63.88	100.00
Not classified in records	151	36.12	
Total	418	100.00	100.00

TREATMENT

It is most essential that in every maternity hospital all pregnant patients with heart disease be studied in a special cardiac clinic throughout their antepartum

period. Every pregnant woman who comes to register at a hospital, clinic or physician's office should have a careful and complete examination, in which particular attention is paid to the heart. Too often is this neglected, and the patient proceeds to term with an unrecognized but easily demonstrable heart disease. The possibility of a cardiac lesion is one of the many reasons, and an important one, that all pregnant women must see a physician as early in pregnancy as possible. It is our practice that when heart disease is suspected or diagnosed the patient is immediately referred to our special cardiac clinic, where a thorough reexamination is performed. Should the condition warrant it, the patient is admitted to the hospital for a complete study of her cardiac condition; otherwise she is followed at frequent intervals in the cardiac clinic.

TABLE 5.—*Previous Diseases in 387 Cardiac Patients (Abortions, Full Term and Premature Deliveries)*

Disease	Cases	Per Cent Total
Rheumatism	131	33.9
Rheumatism and scarlet fever	18	4.6
Rheumatism, scarlet fever and chorea	4	1.0
Rheumatism and chorea	11	2.8
Scarlet fever	17	4.4
Scarlet fever and chorea	8	2.1
Chorea	24	6.2
Frequent sore throats	13	3.4
Negative past history	161	41.6
Total	387	100.0

In general we may say that patients with class 1 or class *2a* heart disease can be safely cared for in the office or antepartum cardiac clinic until about two weeks before term, at which time they should be hospitalized. This statement, however, should not be taken too literally, as each patient must be treated individually, as symptoms or signs may develop that make it imperative to admit to the hospital a class *2a*, and sometimes even a class 1 cardiac patient, a month or more before the expected date of delivery. The pulse and respiration rates are among the best indications as to the behavior of the heart. Undue fatigue, palpitation, dyspnea and chest pains are further signs of which a careful note and record must be made. An untoward development in any one of these is sufficient cause to hospitalize and provide forced rest in bed—the best treatment for most of these cases. The patients in class 1, and many of those in class *2a*, will deliver spontaneously after two weeks' rest in the hospital, without undue rise of the pulse and respiration rates during labor. However, it is well to use forceps on full dilatation of the cervix in a certain number, the maternal pulse and respiration rates being used as the main index for such intervention. A pulse rate of over 110 and respiration rates of 28 or over are sufficient reasons to save the patient the further strain on the heart incidental to the voluntary muscular work of the second stage of labor. It must be emphasized that any anesthesia producing partial asphyxia, such as nitrous oxide, is contraindicated in the delivery of cardiac patients. We prefer ether anesthesia, administered by the open drop method, for all our cardiac patients.

TABLE 6.—*Treatment of Cardiac Disease in 418 Patients*

Abortions		32
Spontaneous	7	
Operative:		
Supravaginal hysterectomy	3	
Miniature section	3	
Completion of incomplete	8	
Insertion of Voorhees bag	2	
Therapeutic curettage	8	
Salpingectomy for ectopic	1	
	25	
Deliveries		386
Spontaneous	267	
Operative:		
Forceps	76	
Cesarean section	25	
Manual removal of placenta	4	
Insertion of bougie	5	
Breech extraction	7	
Version and extraction	2	
	119	
Total		418

In patients belonging definitely in class *2b* and class 3, much earlier and longer hospitalization is essential. It is often necessary to readmit the patient to the hospital two or more times during the pregnancy. An analysis of the hospital admissions of our 418 cardiac patients reveals the fact that of this number, twenty-two women had 136 hospital admissions before delivery, an incidence of approximately six admissions per patient. Forceps delivery, to obviate the second stage of labor, is performed far more frequently in these patients. The use of digitalis compounds is of great help, in our experience, in preparing these patients for the ordeal of labor. This may also be said for those patients in whom we perform cesarean section because of the heart condition. When the patient is definitely in class 3, our treatment is more radical than in the class *2b* patient. When there has been a definite break in compensation either prior to or during the pregnancy, we generally advise cesarean section with sterilization. Such patients are admitted to the hospital early in pregnancy; adequate rest and digitalis therapy is provided and the section is performed when the patient has attained her optimum condition and no further improvement appears possible. The operation is performed under open drop ether anesthesia and in the presence of a competent internist. During the past four and one-third years we have performed such cesarean sections on patients definitely in class 3 and have lost only one mother. Of course, it is not advisable to allow some of these class 3 cardiac patients to proceed to viability, and therapeutic abortion or miniature cesarean section becomes the treatment of choice. In our 418 cardiac cases, therapeutic abortion for the heart condition was performed in twelve.

TABLE 7.—*Incidence of Operative Treatment, with Cardiac Disease as the Indication, in 418 Cardiac Patients*

Operation	Number	Percentage
Therapeutic abortion	12	2.87
Cesarean section	17	4.07
Forceps	50	11.96
Induction	1	0.24
Other (operative + nonoperative)	338	80.86
Total	418	100.00

An analysis of the past history as well as careful questioning of our 418 cardiac patients revealed the astounding fact that 189, or 49.8 per cent, of them were wholly unaware that they had cardiac disease. This finding further impressed us with the absolute necessity of a careful heart examination on every pregnant woman at her first visit to her physician.

The important factors in the handling and treatment of cardiac disease in pregnancy are:

(*a*) All pregnant patients must consult their physician early in pregnancy.

(*b*) A thorough examination, including the heart, must be made at the time of the first visit.

(*c*) If the past history, symptoms, signs or examination reveal heart disease, however mild, the patient should be followed in a special cardiac clinic or by her physician in consultation with a competent internist.

(*d*) All pregnant patients with cardiac disease must be in a hospital during the last two weeks of gestation and must be delivered in the hospital.

(*e*) Patients with class 1 and *2a* heart disease may be delivered spontaneously, provided the pulse and respiration rates are not markedly augmented or no untoward symptom or sign such as dyspnea or cyanosis develops, in which event it is advisable to obviate the second stage of labor by the application of forceps on full dilatation of the cervix.

(*f*) Patients in class *2b* and class 3 should be hospitalized early in pregnancy in order that as accurate an evaluation of the cardiac reserve as possible may be made in order to decide whether or not the pregnancy should be allowed to proceed.

(*g*) Should it be deemed advisable to interrupt the pregnancy, it becomes the obstetrician's further responsibility to decide whether a therapeutic abortion followed by birth control, a therapeutic abortion followed by tubal sterilization or a miniature section with sterilization is the proper treatment. This decision will depend on a number of factors, such as the age and parity of the patient, the duration of the pregnancy, the number of living children, the desires of the patient and her husband and, lastly but most important, the severity of the cardiac involvement.

TABLE 8.—*A Comparison of Cardiac Disease with the Other Causes of Maternal Mortality*

Cause of Death	1932	1933	1934	1935	1936	Per Cent of Total
Cardiac disease	.....	16.7%	.....	15.4%	9.1%	10.0%
Hemorrhage (antepartum + postpartum)	25.0%	.....	50.0%	23.1%	18.2%	22.5%
Lung conditions (pneumonia, infarct)	50.0%	16.6%	33.3%	15.4%	.....	17.5%
Infection (intrapartum + postpartum)	.....	16.7%	.....	15.4%	27.3%	15.0%
Pyelonephritis	.....	16.7%	16.7%	7.7%	9.1%	10.0%
Toxemia	25.0%	16.7%	.....	.....	9.1%	7.5%
Vascular accidents (embolus, etc.)	.....	.....	.....	.....	7.6%	9.1% 5.0%
Ruptured uterus	.....	.....	.....	.....	9.1%	2.5%
Other	.....	16.6%	.....	15.4%	9.0%	10.0%

(*h*) On the other hand, should it be deemed advisable to let the pregnancy proceed to viability or full term, the patient may have to remain in the hospital for months or be readmitted several times during the pregnancy in order to maintain a careful and vigilant watch over the cardiac condition. It may be necessary to digitalize the heart and to continue digitalis therapy.

(*i*) The treatment, when viability or term is reached, in this relatively small but important group of patients will depend on the cardiac condition in each individual. When there has been a history of definite cardiac failure and the heart is now compensated, it is our practice to perform a cesarean section with tubal resection. In the other patients in this group it is usually advisable to deliver by forceps.

(*j*) No anesthesia producing varying degrees of asphyxia should be used in cardiac patients, at the time either of delivery or of operation. Open drop ether anesthesia has given us the best results.

(*k*) Cardiac patients who are first seen or admitted to the hospital in labor with acute heart failure must be placed in an oxygen tent and delivery effected as soon as possible, but consistent with sound obstetric principles. So far we have delivered none of this group of patients by cesarian section. Cardiac stimulants, such as ouabain, are of course of the utmost assistance in these patients.

Three charts are presented to portray the behavior of the pulse and respiration rates in a class *2a* cardiac patient delivered spontaneously, in one in which forceps delivery became advisable and in a class 3 cardiac patient delivered by cesarean section, respectively. It is in the cardiac patient that the pulse and respiration rates assume particular importance, since they so frequently become the main indication for operative intervention. Both charts 2 and 3 show the manner in which these rates return to normal shortly after delivery is effected.

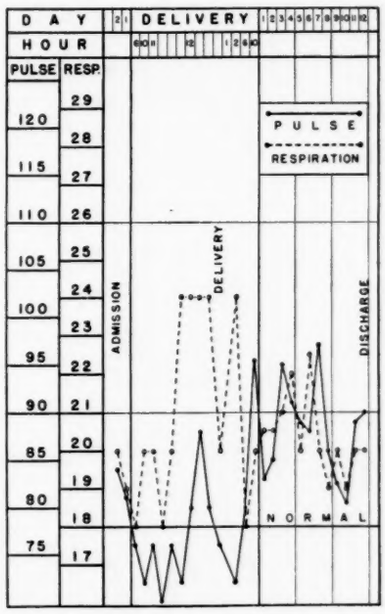

Chart 2.—Spontaneous delivery in class *2a* cardiac disease.

SUMMARY

There is a definite effect of gestation on the cardiac output, as shown by experimental work on the minute volume in both animals and the human being. The amount of work performed by the heart starts to increase during the first trimester of pregnancy and at term is approximately 50 per cent above the normal nonpregnant level. There can be little doubt, although as yet we have no experimental proof, that labor demands a further and perhaps marked increase in the minute volume of the heart.

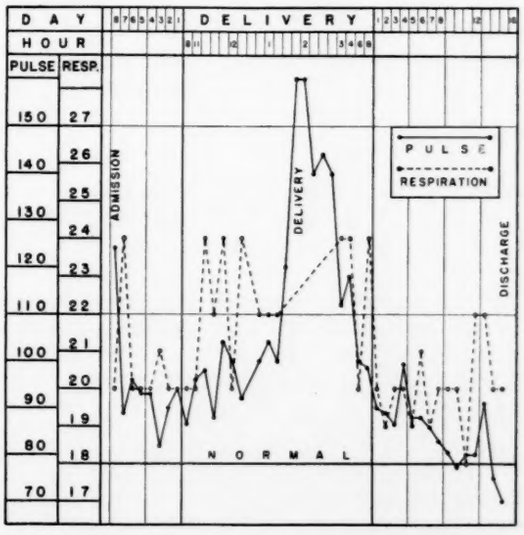

Chart 3.—Forceps delivery in class *2a* cardiac disease.

In our series 418 pregnant patients suffered from cardiac disease. About 85 per cent of these patients had the milder types of involvement, which we group as class 1 and class *2a* heart disease. The remaining patients, representing 15 per cent of the total, suffered

from serious heart disease (class *2b* and class 3) and form the group in which occurred our maternal deaths from heart disease. To a large extent cardiac disease accounts for the total uncorrected maternal mortality in a series of 18,207 consecutive obstetric discharges during a four and one-third year period in the Lying-in Hospital.

CONCLUSIONS

1. In 14,157 obstetric patients discharged from the hospital, the incidence of cardiac disease is 3.97 per cent.

2. The maternal mortality is almost three times as high in cardiac patients as in the total hospital patients.

3. Rheumatic heart disease accounts for more than 90 per cent of our pregnant cardiac patients.

4. We are of the definite opinion that the functional classification of the New York Heart Association is of more value as an aid in the treatment of the pregnant patient suffering from heart disease than is the anatomic classification.

5. Only about 41 per cent of the group of 418 cardiac patients studied gave no history of rheumatic fever, scarlet fever, chorea or frequent sore throat.

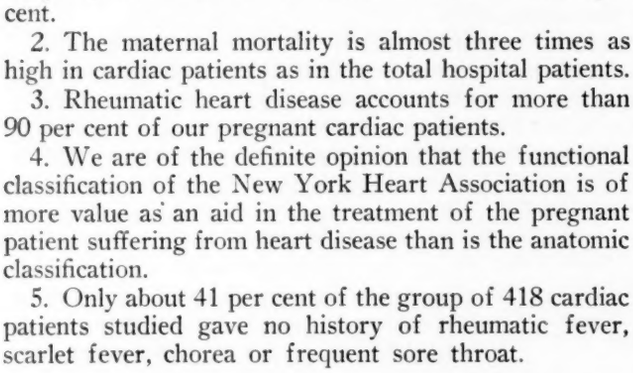

Chart 4.—Cesarean section with sterilization in class 3 cardiac disease.

6. About 50 per cent of the 418 cardiac patients were wholly unaware, at the time they first consulted a physician in their pregnancy, of the existence of a cardiac disease.

7. Hospitalization and complete rest are the greatest aids in the treatment of heart disease in pregnant women.

8. Digitalis and its compounds are of definite help in the severe types of this disease.

9. Increased pulse and respiration rates, dyspnea and cyanosis, undue fatigue, palpitation and chest pains are the outstanding signs and symptoms in the evaluation of the cardiac condition.

10. The treatment in class 1 and class *2a* cardiac patients consists of hospitalization two weeks before term, followed by spontaneous delivery or in a small number forceps delivery at the beginning of the second stage.

11. The severe types, class *2b* and class 3, must be hospitalized earlier in pregnancy in order to decide whether the pregnancy should be allowed to continue, and, if so, delivery should be effected by forceps unless the patient falls in the class 3 category.

12. In those patients who have had a definite break in compensation it is advisable, after adequate hospitalization with digitalis therapy, to perform a cesarean section either at viability or at term, followed by sterilization.

530 East Seventieth Street.

CLIMATE AND RHEUMATIC HEART DISEASE

A SURVEY AMONG AMERICAN INDIAN SCHOOL CHILDREN IN NORTHERN AND SOUTHERN LOCALITIES

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The influence of climate on the prevalence, course and clinical picture of rheumatic fever has been much discussed though seldom accurately measured.[1] Widespread differences in clinical concepts about this disease which exist in different places, difficulties in clinical diagnosis and the absence of specific diagnostic tests have made it practically impossible to determine its prevalence with accuracy in any given locality, much less to compare its prevalence in several localities. Despite the lack of accurate data, however, there is general agreement that the disease is common and severe in temperate zones, that it is less common in warmer and subtropical climates, and that it is rare in the tropics.[2] But comparative prevalence determinations in which identical diagnostic criteria have been used in different geographic or climatologic locations are practically nonexistent. Consequently it has been the major object in this work to make such determinations under conditions that were moderately controlled.

METHODS

For measuring the geographic prevalence of rheumatic heart disease we have determined the rates (or percentage) of such cases as could be found among three groups of Indian school children in northwestern and southwestern sections of this country. The choice of these Indian populations has rested on the fact that there is a general similarity from the standpoint of race among some North American Indian tribes which is not found among other groups of Americans, and also that, regardless of their geographic locality, there is a general similarity of their living conditions. Furthermore, within certain Indian reservations in this country many of the adults and almost all of the younger children have spent their lives within a few miles of the place of their birth. Their illnesses, therefore, should be truly representative of local, living and climatic conditions. In fact, several such groups of Indians may furnish more valuable information about

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1. Accurate determinations on the prevalence of a disease which is not reportable are difficult enough to obtain but particularly difficult in a disease in which there is no diagnostic test, such as rheumatic fever or its sequelae. Data from hospital admission lists throughout this country or from private practice are of some value, though admittedly inaccurate. See discussion of Nichol's [2a] paper and Climate and Rheumatic Fever, editorial, J. A. M. A. **108:** 210 (Jan. 16) 1937.

2. Most of the recent literature on this subject has been summarized by (*a*) Nichol, E. S.: Geographic Distribution of Rheumatic Fever and Rheumatic Heart Disease in the United States, J. Lab. & Clin. Med. **21:** 588 (March) 1936. See also (*b*) Coburn, A. F.: The Factor of Infection in the Rheumatic State, Baltimore, Williams & Wilkins Company, 1931.

the geography of disease than do most school populations in this country. Particularly is this true of the Southwest, a region which has been included in this survey, where the white school population contains a large percentage of recent immigrants from other regions.

A final controlled condition used in this study is that the same methods of gathering data and the same diagnostic criteria have been applied by the same two examiners in the different locations studied.

In planning the study, a section of the West was first outlined and a number of Indian reservations within this section were chosen (fig. 1). Permission for the privilege of proceeding with this work was first obtained from the Office of Indian Affairs, U. S. Department of the Interior.[3] The reservations were then divided into a northern, a middle and a southern division, from which comparable groups of children could be examined. As will be seen from the map in figure 1, the two northern reservations (representing Crow, Shoshone and Arapahoe Indians) were located in Montana and Wyoming; the middle reservations (largely representing Navajo Indians) were located in northern New Mexico and northern Arizona, and the southern reservations (representing Pima and Papago Indians) were located in southern Arizona. It will also be seen that the middle group is not separated from the southern one by nearly as great a distance as it is from the northern one. But in spite of their proximity to one another the isothermal lines show a difference of 20 degrees F. in the average temperature (which is largely the result of a difference in altitude) between the southern and the middle group, and this is considerably greater than the temperature difference of 5 degrees F. existing between the middle and the northern group.

Another climatic condition that concerns the areas under surveillance appears in figure 2. Here the degree of moisture (precipitation) is shown on the sectional map. It will be seen that all the Indian reservations surveyed were in fairly dry areas but that the southernmost group is in a region with precipitation figures ranging from only 3 to 10 inches a year.

It was our object to examine about 1,000 children of the same age distribution from each of these three (northern, middle and southern) groups.

DIAGNOSTIC CRITERIA

Obviously the diagnosis of clear-cut rheumatic heart disease offers little difficulty, but mild cases offer considerable difficulty. Most of the cases encountered in a survey of this type are mild, and of course inactive, and unfortunately the diagnosis of just such forms as these requires a large element of personal judgment. It has been our effort throughout, however, to include only the more definite cases.

In approaching the problem we have assumed from the onset that the great majority of children showing rheumatic carditis will present evidence of mitral insufficiency or stenosis and that in such cases systolic or presystolic murmurs will probably be present in the region of the cardiac apex. In justification of this approach it should be emphasized that we have followed the rule that most systolic murmurs do not indicate the presence of any organic heart disease. Nevertheless a search for such murmurs generally represented the starting point of our cardiac examinations.

All the examinations recorded in this study were performed by one of us, and most of the doubtful cases were seen by both of us. In the actual performance of the cardiac examinations the following procedure was used:

The children were stripped to the waist and unless abnormal conditions were present were examined only in the erect position. A few features besides those referable to the heart were included; namely, the degree of nutrition, evidences of infection of the upper respiratory tract and the size of cervical lymph nodes. For the cardiac examination the hand was placed on the precordium and the point of maximum impulse located.

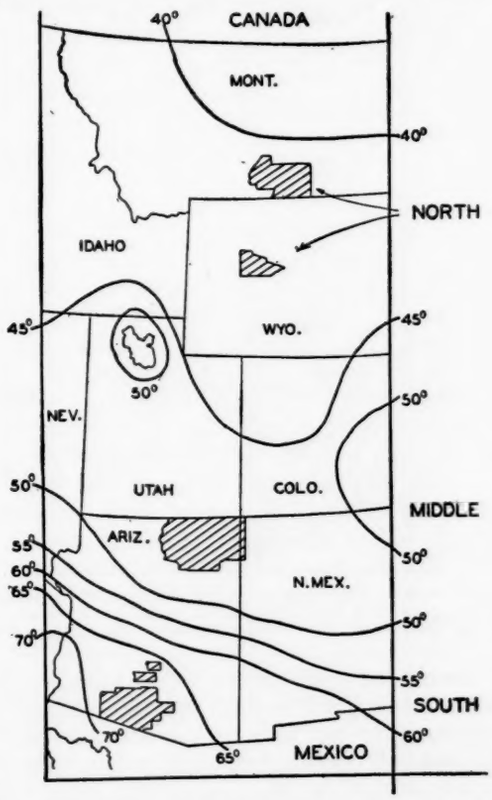

Fig. 1.—Sectional map of the United States showing (by shaded areas) the locations of the three groups of Indian reservations included in this study. The series of curved lines (isotherms) indicate average annual temperatures.

The stethoscope was then placed on the apical region, the midprecordium and the base of the heart. If no abnormalities were found on palpation and auscultation, the child's heart was considered normal. No attempt was made to determine the size of the heart by percussion, unless abnormalities detected either by palpation or auscultation were found. The usual time consumed in the examination of children with normal hearts was about two minutes per child.

As a rule we paid little or no attention to soft systolic murmurs heard only at the pulmonic area and have not included them in the recorded results. All murmurs heard in the midprecordium were, however, recorded. Of these, systolic murmurs were the most frequently heard, and we have classified them arbitrarily, i. e., regardless as to where they seemed to arise, into three types, according to the diagram in figure 3.

Type I systolic murmurs represent a loud murmur, usually maximal in the general region of the apex,

3. Dr. J. G. Townsend, Director of Health, Office of Indian Affairs, Washington, D. C., gave this permission, and many medical officers in the Indian Service, whose names are too numerous to mention here, were generous in their cooperation and support of this work.

which can be heard in the area indicated; that is, besides covering the midprecordium it extends laterally beyond the left nipple line and often downward. Such murmurs were present in the majority of cases that we have listed as definite rheumatic heart disease.

Type II represents a systolic murmur which is not as loud as type I and can be heard laterally as far as the left nipple line but not beyond. It is in the interpretation of these type II murmurs as to whether they

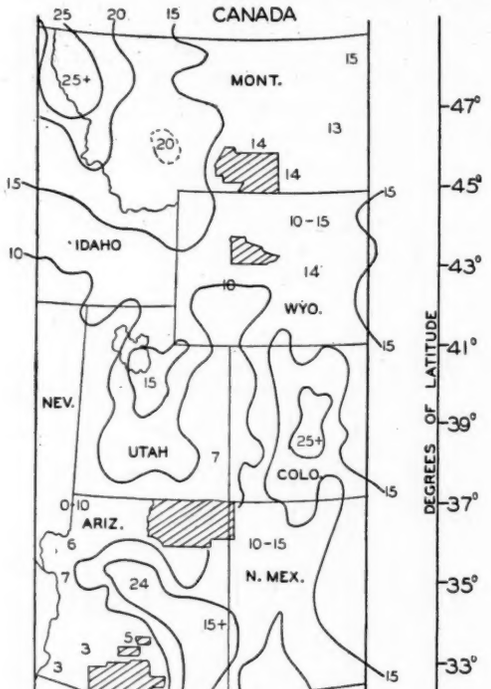

Fig. 2.—Sectional map, similar to that in figure 1, showing by isohyetal lines or scattered figures the normal annual precipitation (expressed in inches). Degrees of north latitude appear on the right of this map.

were "functional" or "organic" that we have met our greatest difficulty, and in their presence we have examined the heart as carefully as the circumstances would permit, and with the subject lying on his back and also on his left side.

Type III is represented by a soft systolic murmur which is heard in the midprecordium but is also heard in the pulmonic area and is not transmitted laterally. It is our impression that the great majority of these murmurs are transmitted from the base downward. From the onset of this survey we did not consider them as of much significance as far as the diagnosis of rheumatic heart disease is concerned, and evidence accumulated in the course of the study substantiated this belief.

In interpreting our type II and III systolic murmurs as a starting point in the diagnosis of rheumatic heart disease, the following other aids to diagnosis were occasionally used:

A history of rheumatic fever, if present, was regarded as of positive importance in the presence of questionable cardiac signs. Such histories were obtained, however, in a very small number of questionable cases.

Some of the other signs, which have been regarded as aids to a positive diagnosis, were the presence of cardiac enlargement that could not be explained on any other basis, an increase in the area of impulse to the left, accentuation of the first sound at the apex, accentuation of the pulmonic second sound, and accentuation of the murmur when the patient was lying on his left side.

The diagnosis of congenital heart disease rested on the cardiac manifestations, the presence of cyanosis, clubbing of the fingers and the history.

RESULTS

Rheumatic heart disease rates found in the school children within the three areas covered by this survey appear in table 1. For their proper interpretation they should be compared with similar rates determined in school children from other sections of this or other countries, but unfortunately few such comparisons can be made. For, although there are many statistics on the observed prevalence of heart disease in school children, they have been largely compiled from data obtained in the course of routine physical examinations in which the diagnostic criteria for either heart disease or rheumatic heart disease have not been defined and the methods of examination of the heart have of necessity been more cursory than those employed here. This question has been discussed in a previous publication in which juvenile, organic heart disease rates ranging from 0.1 to 2.1 per cent have been collected from the literature (up to 1934) and tabulated geographically.[4] It is our impression that such crude rates, so far as they concern rheumatic heart disease, are considerably lower than those which would have been found in this survey. This impression has been strengthened by the fact that, using the identical methods outlined in the present report, one of us (J. R. P.) has previously determined the prevalence of rheumatic heart disease in a group of school children within the city of New Haven, Conn., and found it to be considerably higher than that obtained the previous year by the school physicians.[4]

But to return to the figures in table 1. Here it appears that Indian children from certain of the northwestern reservations show a high rate of rheumatic heart disease. It happens to be twice as high as that (2.2 per cent) determined by the same method among urban New England school children living at a somewhat more southern latitude, although in a climate far more damp. Among the thirty-one children found to have rheumatic heart disease in the northwestern Indian

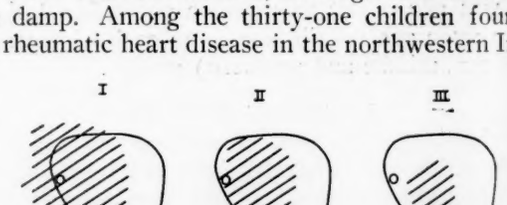

Fig. 3.—Diagrammatic cardiac outlines on which are indicated the sites (shaded areas) where the three types of systolic murmurs recorded in this study were heard. The small circle roughly marks the site of the left nipple.

group, about a third of them proved to have mitral stenosis, and also in about a third of them a history of an illness compatible with rheumatic fever was obtained. In about half of the latter group (with a story of illness) hospital records were available. These results indicate that the Crow, Shoshone and Arapahoe Indians, which were the northern tribes observed, are

4. Paul, J. R.; Harrison, E. R.; Salinger, Robert, and DeForest, G. K.: The Social Incidence of Rheumatic Heart Disease: A Statistical Study in New Haven School Children, Am. J. M. Sc. **188**: 301 (Sept.) 1934.

quite susceptible to rheumatic fever and that they often suffer from its most serious complication.[5] No difference in the rheumatic heart disease rates was found among these three different northern tribes and no apparent difference between those of mixed blood as compared with those of pure blood.[6]

In the middle division of Indian reservations (from northern Arizona and New Mexico—largely representing Navajos) the rheumatic heart rate was found to be 1.9 per cent, or less than half that found among the tribes farther north. Here again a third of the twenty-one Indians proved to have mitral stenosis and in about the same percentage a history compatible with that of rheumatic fever was obtained.

In the southernmost group (southern Arizona—largely representing Pimas and Papagos) rheumatic heart disease was found to be rare. Only five cases were found in about 1,000 children examined, and there was only one case of mitral stenosis.

TABLE 1.—*Rheumatic Heart Disease Rates in Three Different Locations* *

Location of Reservations	Latitude North	Climatic Conditions: Temperature†	Climatic Conditions: Precipitation‡	No. of Indian Children Examined	No. with Definite Rheumatic Heart Disease	Per Cent with Rheumatic Heart Disease
North	44°-46°	42.5°	10-14	688	31	4.5
Middle	26°-37°	47.5°	7-10+	1,106	21	1.9
South	32°-33°	67.5°	3-10	1,019	5	0.5

* For purposes of comparison, attention is called to the fact that the prevalence of rheumatic heart disease has been found to be 2.2 per cent among 2,624 urban and rural school children similarly examined in 1934 in and about the city of New Haven, Conn.[4]

† Approximate average normal temperature for the year in degrees Fahrenheit.

‡ Normal annual precipitation in inches.

OTHER HEART ABNORMALITIES

Mention has been made that the presence of various (three) types of systolic murmurs (fig. 3) was recorded in the course of this survey. Actual prevalence figures for each type are not listed in this report but it is of significance that our type III, midprecordial systolic murmurs (heard also at the base, rather than laterally) were found with equal prevalence in all three (northern, middle and southern) groups. This is in sharp contrast to the geographic prevalence of our type I murmurs (transmitted laterally) and is a finding having some bearing on the clinical interpretation of systolic murmurs.

Examples of congenital heart disease (or congenital cardiac abnormalities) are limited to those types which are most apt to be detected by auscultation alone. Seven such cases (about 0.2 per cent) were found in the entire number (2,813) of children examined. Included among these seven was one case of dextrocardia and two definite cases of patent ductus arteriosus. The remaining four were probably examples of interventricular septal defects.

Other cardiac conditions included one case of old tuberculous pericarditis, five cases of unexplained cardiac enlargement, three of unexplained tachycardia and three of extrasystoles.

Extracardiac abnormalities noted in the course of our examinations which are worth mentioning include the high and more or less equal prevalence of mild infections of the upper respiratory tract—largely colds, present in all three groups (northern, middle and southern), the high and almost equal frequency with which enlargement of the posterior cervical lymph glands was encountered, and the high prevalence of infestations of the scalp with pediculus capitis.

POSSIBLE SOURCES OF ERROR

Obviously the rheumatic heart disease rates listed in table 1 cannot be satisfactorily compared with one another without a consideration of the factors that may influence them. For instance, unless the children from each major geographic division are of comparable age, the carditis rates are not comparable.[7] The age distribution of the children in these three divisions is not identical, but their degree of similarity is sufficient to allow a comparison of several of the different age groups. This appears in table 2. The three age groups of 7 to 9, 10 to 12, and 13 to 15 years offer the most significant figures.

Another point that may have some bearing on our observations is the difference in physical types and degree of nutrition existent between Indians of some of the different tribes. This has been well illustrated by the difference between the Arapahoe children of the North and the Pima children of the South. Arapahoes are plains Indians, for the most part "meat eaters," and the children, at least as they were brought in from their homes at the opening of the schools, often appeared undernourished. Pima Indians are agricultural and subsist largely on a carbohydrate diet, and the children under similar circumstances were often greatly overnourished. In comparing the weights of Indian children from these two tribes with the average normal weights of white American children of comparable ages and heights, we found that about 45 per cent of the Pima children were "overweight" (10 per cent being as much as 35 pounds [16 Kg.] or more "overweight") and but 8 per cent were "underweight," whereas among the Arapahoe children 15 per cent were "overweight" and 41 per cent were "underweight." Consequently in determining the rheumatic heart disease rates in

TABLE 2.—*Rheumatic Heart Disease Rates in Different Age Groups*

		Age Groups* 5-6	7-9	10-12	13-15	16-19	19+
North division	Number of children in age group	80	204	209	142	49	4
	Per cent with rheumatic heart disease	0	3.9	8.1	4.2	..	..
Middle division	Number of children in age group	61	158	203	312	297	75
	Per cent with rheumatic heart disease	0	4.4	2.0	1.5	1.3	1.3
South division	Number of children in age group	114	296	299	227	77	6
	Per cent with rheumatic heart disease	0	1.0	0.3	0	1.3	..

* Rates have not been determined unless the age groups contain more than fifty children.

5. A high prevalence of rheumatic heart disease has been previously recorded among another Northern American Indian tribe; namely, the Menominees in northeastern Wisconsin. Hrdlička, Aleš: Tuberculosis Among Certain Indian Tribes of the United States, Bull. 42, Smithsonian Institution, Bureau of American Ethnology, Washington, D. C., Government Printing Office, 1909.

6. This is in contrast to the results found in tuberculosis among some of these same Indian tribes in which a relationship between the degree of Indian blood and the incidence of tuberculous infection was found. Aronson, J. D.: Personal communication to the authors.

7. A serious source of error may exist in data concerning the age of North American Indians. In some tribes the parents do not seem to know the ages of their children. Under these circumstances "ages" have been assigned to many of the children in this series by school teachers. Some appreciation of their accuracy can be obtained from height-weight tables. It is our impression that about two thirds of the ages recorded in our series are reasonably correct. In the other third (and this applies mainly to the middle division) there is a probable error in many of the children of about ± 1 year.

these two particular groups of Indian children the difference lies not only in their geographic separation but also in their physical type. In one group there is a large percentage of apparently undernourished children with thin chest walls and easily heard heart sounds, and in the other there are many fat children with thick chest walls. What effect this difference in degree of nutrition may have on the actual prevalence of rheumatic heart disease is, of course, unknown, but what effect it may have on the detection of mild cases of rheumatic heart disease should be considered. Some cases of rheumatic heart disease may have been overlooked in the Pima children, owing to the poor audibility of heart sounds and perhaps to the difficulty in determining the size of the heart. This may have influenced our results, but it is our belief that such a source of error has been slight. Even if the error in this group were as great as the omission of one case of rheumatic heart disease in every 100 children examined, our results would still point to an appreciable decrease in the rheumatic heart disease rates in the Southwest as compared with the Northwest.

COMMENT

It has been intimated earlier in this article that the influence of climate on the prevalence of rheumatic fever is a subject much discussed but less frequently defined and that there has been a dearth of accurate data on the subject. Despite this lack of accurate data there has been, however, general agreement that the disease is common and severe in the temperate zones, that it is less prevalent in warmer (subtropical) climates, and that it is rare in tropical climates. With this impression the results presented in this paper in general agree, and certain figures are presented which we believe are significant because of the moderately controlled conditions under which they have been obtained.

On the other hand, there has been little general agreement as to whether the clinical picture of rheumatic fever is the same in the North as in the South. It has even been suggested that the southern form of the disease may be characterized by the absence of joint symptoms and, without these warning signals of acute arthritis and chronic muscle pain, rheumatic carditis may develop in the south more insidiously and with greater frequency than is generally supposed.[8] From our own results the notion that rheumatic carditis may develop with considerable unsuspected frequency in the Southwest finds no support, for regardless of the fact that the northern rate used for comparison was found to be unusually high (4.5 per cent) the southern rate (0.5 per cent) seems unusually low.

The high rate (4.5 per cent) found among the northern Indian tribes raises a question of some interest because the element of cold, or more particularly dry cold, has not usually been regarded as the sole climatic feature that favors a high prevalence of the disease. On the other hand the element of cold coupled with dampness has long been incriminated as one of the primary conditions favoring the spread of rheumatic fever, as has also the influence of crowding, such as urban as opposed to rural life. Consequently, it is remarkable to find a higher prevalence in relatively dry Montana and Wyoming (normal annual precipitation from 10 to 15 inches) among rural Indian children than that found among urban children in the vicinity of New York City (normal annual precipitation 45 inches). This suggests that either a high susceptibility exists for the disease on the part of some Indians or that something is present in their living conditions that is particularly conducive to the spread of the disease. Whatever such factors may be, they remain to be analyzed. Attention may be called, however, to the fact that although the Indians included in this survey represent a rural (as opposed to an urban) population, the degree of crowding that must occur during the winter months among their family groups probably rivals or even exceeds that found within tenement houses in city slums; for the Indian family group often includes three generations, their winter dwelling is generally a one room affair, and Montana winters are long.

SUMMARY

The different rates with which rheumatic heart disease may be found in school children in different sections of this country is a valuable method for determining the geographic prevalence of rheumatic fever. Groups of Indian school children are particularly favorable for such determinations because of their homogeneity from the standpoint of race and of living conditions and because of the stability of the populations within many of the Indian reservations of the West.

From a survey of Indian children it has been shown that in the cold though relatively dry climate of Wyoming and Montana the prevalence of rheumatic heart disease (4.5 per cent) is high, in comparison with rates determined in New England (2.2 per cent), whereas in the warm though dry climate of southern Arizona it is correspondingly low (0.5 per cent). In other words, rheumatic heart disease is almost ten times as frequent among western Indians living in regions close to the Canadian border as it is among similar groups living close to the Mexican border.

It is probable that the clinical course of rheumatic fever in the Southwest may be milder than that usually encountered in the North, but no evidence was found in this survey suggesting that the apparent mildness of the clinical picture of rheumatic fever in the Southwest may allow rheumatic heart disease to develop with an unsuspected frequency comparable to that seen in more northern climates.

8. McLean, C. C.: The Age Incidence and Climatic Variations in the Manifestations of So-Called Rheumatic Fever in White Children, J. Pediat. **2**: 320 (March) 1933. See also discussion of paper by Bitzer, E. W., and Cook, G. L.: A Clinical Investigation of Incidence of Rheumatic Heart Disease in a Subtropical Climate, South. M. J. **27**: 503 (June) 1934. Also editorial opinion expressed by Hench, P. S.; Bauer, Walter; Fletcher, A. A.; Ghrist, David; Hall, Francis, and White, Preston: The Present Status of the Problem of "Rheumatism"; a Review of Recent American and English Literature on "Rheumatism" and Arthritis, Ann. Int. Med. **8**: 1315 (April) 1935.

Theory of Cause of Allergy.—Studying a large number of allergic families and comparing them with normal controls, Haag has come to the conclusion that there is no evidence that allergic diseases may be considered psychoneuroses or that mental conflict is of any major significance in their etiology. Since a hereditary predisposition is the basis of allergic diseases, all positions in the family circle should show equal incidence of such disease. Since first-born children in all families and youngest children in large families showed the greatest frequency of allergic diseases, some special factor must be present there. The author finds an explanation in the type of nutrition. First-born children, and the youngest children, where older brothers and sisters spoil them, receive special care and are frequently overfed. He regards overfeeding in childhood of significance in producing allergic diseases.—Feinberg, S. M.: Progress in Asthma and Hay Fever, *J. Allergy* **8**:280 (March) 1937.

BASAL PERICARDITIS

A SIGN OF EARLY RHEUMATIC INFECTION

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There are numerous difficulties in making a diagnosis of a low grade active rheumatic state. The laboratory has been of little service in this regard. One of us [1] observed adventitious friction-like murmurs, somewhat musical in character, in the majority of children who at various times experienced one or several symptoms of childhood rheumatism, such as muscular and joint pains, paroxysmal abdominal pain,[2] sore throats, stiff neck, involuntary twitchings resembling tics,[3] pallor, weight fixation and persistent low grade elevation in temperature (to be found only when carefully looked for). From our studies, these friction-like, at times somewhat musical, murmurs appear to be the earliest objective signs in low grade childhood rheumatism and are apparently due to pericarditis at the base of the heart, in the region of origin of the great vessels, involving the fold of the pericardium at the point of reflexion of the latter structure. The sulcus between the aorta and the pulmonary artery is an excellent dam for the accumulation of inflammatory exudates or transudates. It may be looked on as a peripulmonitis and periaortitis, although it is not entirely confined to these areas.

The adventitious sound of mild plastic rheumatic pericarditis is best heard in the region of the left second and third costosternal junctions, although it may also be heard at the apex. It is friction-like, musical (at times) and of variable quality—from faint to harsh. It is apt to be systolic in time but is often diastolic and only occasionally of the double or "to and fro" type, and it has no definite points of transmission but may be audible over surrounding regions, depending on its volume. Its intensity and character often vary from beat to beat. It is never totally obliterated by deep inspiration, although the phases of respiration do alter its volume somewhat. It becomes louder with the patient in the prone position. It is accompanied by an accentuated second pulmonic sound.

This friction-like murmur at times may be inconstant; indeed, transitory. It may disappear some variable time following the arrest of the disease process, although in most cases it is present for many years after the arrest of the rheumatic phase. It is noteworthy that, in quite a number of cases presenting this sign, orthodiagrams or teleroentgenograms reveal a straightening of the left border of the cardiac silhouette.

A differential diagnosis may be made between the adventitious sound due to mild plastic pericarditis and other murmurs in the usual accepted manner, as shown in the accompanying table.

*Differential Diagnosis**

Murmur	Mild Pericarditis†	Mitral Stenosis	Mitral Regurgitation	Functional
1. Time	May be systolic or diastolic; may vary during a single examination; rarely "to and fro"	Presystolic or diastolic	Systolic	Systolic
2. Character	Friction-like but variable	Rough, rumbling type	Soft, blowing	Soft
3. Intensity	Second left costosternal junction; occasionally also at apex but may vary during a single physical examination	Apex	Apex	Base of heart (pulmonary area); occasionally at apex
4. Transmission	None	May be audible in axilla (but not transmitted)	To axilla and back	None
5. Stability of character and intensity	Exceedingly changeable in intensity and character; it may vary from beat to beat, from examination to examination, from day to day	Fixed in character; may vary in volume, depending on cardiac action	May change over a period of may months or years if organic, owing to contraction of the scar around the orifice and slow development of mitral stenosis‡	Not variable, except after exercise
6. Age frequency	Seen in early childhood, 3 years to 12 years	From 12 years up, most frequent past 15 years	Any age	Any age
7. Percussion dulness	Normal size	Slightly enlarged	Left sided hypertrophy	Normal size
8. Roentgenogram	Straightening out of left border	Prominent pulmonic conus and left auricular hypertrophy, and frequent dilatation	Mitral configuration	Normal size, shape and position, unless murmur is caused by dilatation of valve ring
9. Electrocardiogram	Frequently normal with exception of occasional changes seen in the active rheumatic state	P wave changes; right axis deviation	Left axis deviation	Normal
10. Outcome	Frequently disappears	Permanent, as a rule, in presence of sinus rhythm	Permanent if organic; functional type may disappear	May disappear permanently

* The material for this table has been collected from our own case histories, Temple University Heart Station, Torresdale and Willow Crest convalescent homes.
† Differentiated from aortic valvulitis by the fact that the murmur of the latter is usually transmitted up to the vessels of the neck.
‡ This may account for the rarity with which one finds mitral insufficiency in adult life.

A boy, aged 7 years, was referred from the pediatric clinic to our cardiac clinic because the child complained of anorexia and restlessness and the mother wanted a "good tonic" in order to build him up. It was most difficult to obtain a history from the mother, but after persistent grilling she admitted that the child would come to her bed at nights under the pretext of pain in the knees or ankles, but she knew it was only because he did not want to sleep by himself.

1. Wolffe, J. B.: Arch. Pediat. **50**: 832 (Dec.) 1933.
2. Wolffe, J. B., and Brim, C. J.: The Abdominal Syndrome of Rheumatic Disease in Childhood, Am. J. Dis. Child. **52**: 296 (Aug.) 1936.
3. Wolffe, J. B., and Sloane, Paul: Concepts in the Treatment of Chorea, Arch. Neurol. & Psychiat. **32**: 662 (Sept.) 1934.

On physical examination we found the throat injected; the tonsils had been cleanly removed. The cervical glands were enlarged and slightly tender. The heart was slightly enlarged to the left and was overactive. The rate was 93 per minute. A loud systolic murmur was heard at the apex and base of the heart. Some members of the clinic thought that the murmur was transmitted to the axilla, while others felt that it was audible only because of its loudness. There was also a short systolic murmur heard over the second right costosternal junction, slightly transmitted to the vessels of the neck. The second pulmonic sound was accentuated.

The record further reveals that various members of the clinic recorded the time and character of the murmur at variance with their own previously recorded observations. The consensus was that the child suffered from a low-grade active rheumatic state, mitral valvular disease with regurgitation and aortic valvular disease.

The teleroentgenogram revealed a changing silhouette and a straightening out of the left border. The heart enlarged 1.5 cm. in nine months. The child's mother was very uncooperative.

One and a half years after attending the clinic this child was killed by an automobile. The autopsy taught us to reinterpret some of the adventitious sounds that we had thought to be due to valvular disease. The left ventricle was found to be slightly larger than normal. The pericardium was injected; at the base of the heart, around the entire area of the aortic and pulmonic sulcus, was a fuzzy, reddish, cotton-like fibrinous exudate, loosely adherent to the parietal and visceral pericardium. The mitral and aortic valves were injected but not distorted to the extent that the diagnosis of mitral regurgitation was justified. Aschoff bodies were found in the septum.

Several similar observations were made by us, one in an 11 year old girl who died of acute fulminating meningitis who showed signs of childhood rheumatism, on and off, and a boy of 6, who died as a result of uncontrollable chorea. The cardiac pathologic changes were similar to those described.

The excellent recent work of Gross [4] has lent additional pathologic support for the existence of this sign; he says:

> It has been mentioned that all of the active rheumatic cases presented in the peripulmonic sheaths either a microscopic pericarditis or an acute, exudative pericarditis and that in the inactive rheumatic series many cases showed scattered lymphocytes and large mononuclear cells in this area. It seems possible that this inflammatory condition of the pericardial mantle bears a causal relation to the markedly increased capillarization of the great vessel roots.

Many careful observers have been cognizant of these adventitious sounds. Their interpretation of it varies. In some clinics it is interpreted as a functional murmur and in others it is attributed to a mitral insufficiency due to dilatation of the mitral ring. Some interpret it as a mitral insufficiency or stenosis, disease of the pulmonary artery or aortic valvulitis, depending on the location of the murmur and the point of maximum intensity.

The frequency with which plastic pericarditis is seen escapes attention only because the disease at this stage is not fatal and the lesion is transitory in character and precedes the later valvular lesions by many years. It is well known that children who are properly cared for will conquer the active rheumatic phase and after several years the heart will be found to be perfectly normal on physical, x-ray and electrocardiographic examination. On the other hand, those who are treated symptomatically with so-called tonics, whose activities are not restricted, who are allowed cold water bathing during the summer and permitted to wear inadequate clothing during the winter, with foci of infection overlooked, after a time show evidence of permanent cardiac pathologic changes.

The proper interpretation of these adventitious sounds is important. It prevents us from making the unwarranted diagnosis of fixed and irreparable valvular disease in cases in which the disease has not progressed to a stage of permanent pathologic state. It also acts as a suspicion arouser.

Every additional aid in the diagnosis of low grade active rheumatic disease should prove of utmost importance. It helps to focus attention on a very common, insidious disease which, when overlooked, often leads to permanent cardiac damage that may be preventable in the greater number of cases.

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4. Gross, Louis: Am. J. Path. **11**: 631 (July) 1935.

ARTERIOSCLEROSIS AND THROMBO-ANGIITIS OBLITERANS

REPORT OF CASES AND TREATMENT

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Since the work of Buerger, who described the characteristic lesions of the vascular walls in thrombo-angiitis obliterans and thus distinguished it from other diseases of the blood vessels, attention has been directed, quite naturally, toward the differences between this disease and arteriosclerosis rather than to those features which they have in common.

Reports in the literature record several kinds of medical treatment of thrombo-angiitis obliterans which have resulted in arrest of the disease and a marked reduction in amputations, but we have failed to find reports of similar treatment applied in cases of arteriosclerosis. We have stressed the features common to the two diseases and, with therapy based on the likenesses of rather than on the differences between the two, we have obtained results in arteriosclerosis even more favorable than those in thrombo-angiitis obliterans.

The decreased peripheral blood supply in both diseases is due in part to functional constriction of the blood vessels and in part to organic changes in their walls, which cause them to become permanently narrowed and rigid. Increase in the viscosity of the blood was found in both diseases in our series. Vasospasm was a factor of as much importance in arteriosclerosis as in thrombo-angiitis obliterans, except in the advanced cases in which the walls of the vessels were rigid. In both diseases the vessels, particularly those of the extremities, were apparently unduly sensitive to vasoconstricting influences, as shown by skin temperature and oscillometric measurements after exposure to cold, after the use of tobacco and as the result of deficient diet. Vasoconstriction in these cases was prolonged beyond the normal response into more or less continuous vasospasm.

Patients with peripheral vascular disease often go first for treatment to the orthopedic surgeon, and since many of these patients have flat feet or some other orthopedic disorder the arterial disease, until far advanced, has all too frequently been overlooked. How-

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ever, recently the orthopedic surgeon has come to recognize early peripheral vascular disease—so much so that in some cases he has failed to treat a coexisting orthopedic condition after making a correct diagnosis of arterial disease. Thanks to these early diagnoses, the majority of the patients in our present series were seen before the vessels were entirely rigid and when the vasospastic element was still one of importance. Twenty-four of the ninety-nine patients with arteriosclerosis had had symptoms of only a few months' duration.

Our experience suggests that vasospasm is an underlying process in both diseases, without which other causative factors might be inoperative. Discussion of this point, however, is beyond the scope of this report, since from the point of view of treatment it is immaterial whether vasospasm is of primary or of secondary importance.

Obviously the aim of treatment is to increase the supply of blood to the extremities, and this we attempted to do first by relieving vasospasm, which results in the dilatation of those vessels with resilient walls, and, secondly, by decreasing the viscosity of the blood, which results in its easier passage through even narrow and rigid vessels.

TREATMENT OF VASOSPASM

Treatment consisted in the use of measures to eliminate five vasoconstricting influences: tobacco, improper diet, worry, undue physical exertion and cold.

1. *Tobacco.*—Those patients who continued to smoke or chew tobacco against advice failed to improve. While the discontinuance of the use of tobacco without other measures was insufficient to bring about lasting improvement in symptoms, we have found no lastng improvement in either disease without it.

It was not sufficient simply to tell the patient not to smoke or chew tobacco. Most of the patients had used it excessively for years. Many had been advised by physicians previously to stop its use but only two had done so. It was necessary to warn them clearly and repeatedly that unless they gave up tobacco completely and for good they could not improve and might even lose their limbs.

2. *Dietary Regimen.*—The patients were given a regimen high in calcium and vitamins because of its favorable influence on vasospasm. This regimen was given, however, even when the vasospastic element was apparently absent, as shown by failure of the skin temperature of the foot to rise after nerve block, because all the patients had been on diets deficient in calcium and in some of the vitamins and because of the general good effects of a diet enriched by these substances.

The chief sources of calcium were milk and cheese. When it was not feasible to include them in the diet, calcium salts were given instead. Concentrates of vitamin A and D were added, vitamin B was given in some form of wheat germ or yeast, and vitamin C was supplied in orange juice and tomato juice.

The dietary schedule given in table 1, designed for the optimum absorption of calcium, was used.

When for any reason milk could not be included in the diet, calcium was supplied in the form of the lactate or gluconate; 2.5 Gm. of calcium lactate, and 5 Gm. of calcium gluconate are equivalent in calcium to a pint of milk. To favor absorption these salts were administered at special times; namely, no nearer meals than four hours after and one hour before. The patients who did not drink milk received two doses of calcium salts a day, while those who drank a pint of milk received one dose. In some cases with a history of unusually marked dietary deficiency in calcium one dose of calcium salts was given for a period of several weeks or more, in addition to the quart of milk in the diet.

Lactose was added to the diet of patients suffering from constipation, except in cases of diabetes. From two to six heaping tablespoonfuls a day effectively regulated the movements of the bowels in the majority of cases. Lactose may cause diarrhea, so that it was necessary to find by trial the amount suitable for each person. Increase in intestinal gas, which sometimes follows the use of lactose, was found to abate usually within the course of a few weeks.

Approximately 19,000 units of vitamin A, and 1,900 units of vitamin D (U. S. P. XI) were given daily in tablet form, three tablets twice a day, for several months.

3. *Worry.*—It was considered an important part of the therapeutic schedule to help the patient to gain insight into whatever domestic, economic or social difficulties might be disturbing him and to aid him in adapting himself to his limitations.

4. *Undue Physical Exertion.*—It is desirable that the work done by individuals with peripheral vascular disease be commensurate with their diminished peripheral blood supply. Accordingly, patients were advised against exertion to the point of pain in the extremities. During the early period of treatment in the clinic, or until considerable improvement was attained, as much rest as possible was advocated. Passive exercises as described by Buerger were considered an important part of the therapy. Patients were instructed to perform these exercises two, three or four times a day according to the following directions:

1. Lie down flat in bed, with shoes and stockings removed.
2. Raise both legs vertically into the air, bending them at the hips so that the soles of the feet face the ceiling. If this position is painful or impossible, the legs may be raised as nearly vertical as possible or may be rested against a wall to the side of the bed or against a chair placed on the bed.
3. Keep the legs raised exactly one minute (by the clock.)
4. Lower the legs; sit up in bed with the legs hanging freely over the edge of the bed (not touching the floor).
5. Keep the legs in this position for exactly one minute (by the clock). While they are hanging over the edge of the bed move the feet slowly back and forth and from side to side, at the ankle joint.

TABLE 1.—*Diet Designed for Optimum Absorption of Calcium*

	Required Food	Other Food Allowed
Breakfast	Orange or grapefruit juice Wheat germ (1 or 2 tablespoonfuls) Milk, 1 pint	Any fruit (raw or cooked) Coffee or tea, with sugar Bread, 1 slice, or 1 roll, with butter
Mid-day meal	Milk or buttermilk, 1 pint Vegetables (except potatoes, rice, spaghetti, corn) Fruit	Cheese Eggs* Bread, 1 slice, or 1 roll, with butter †
Evening meal	Tomato juice (any good canned variety, not the ready-prepared cocktail; seasoning may be added) or Pineapple juice Meat or fish	Any other foods desired

There should be intervals of at least five hours between meals
Nothing should be eaten between meals

* Eggs may be taken at breakfast if preferred.
† One starchy vegetable may be substituted for the bread.

6. Lie down flat in bed; rest for one minute in this position.
7. Repeat entire process five times (that is, six times altogether).

5. *Cold.*—The following instructions were given for keeping the extremities properly warm: In cold weather out of bed the patient should wear (1) white cotton socks, over them (2) woolen stockings covering the knees, (3) woolen underwear, (4) fleece-lined shoes if much outdoors and (5) no tight or ill fitting shoes. In bed (1) he should wear very loose woolen stockings, or cotton wadding, 1 to 2 inches thick, made into boots to cover the feet, legs and knees and (2) he should use an electric light bulb (under a cradle) only if thermostatically regulated at temperatures of from 92 to 93 F.

Hot water bags and other heating pads were forbidden. Warm soaks for the feet and legs once or twice a day were advocated as follows:

1. Use one-half cupful of kitchen salt in 1½ gallons of warm water. Water should be comfortably warm—not too hot—soapsuds of castile soap may be used instead of salt, if preferred.
2. Soak feet once or twice a day for thirty minutes.
3. Dry feet thoroughly, being especially careful to dry the toes and the spaces in between the toes. Do not dry them roughly, taking care that the skin is not injured.
4. Dust plain talcum powder over and between the toes, so that you are sure the toes are dry.

Very light massage is allowed. We have failed to see good results from the use of diathermy, baking or hot and cold contrast baths; in fact, in a number of cases symptoms have become definitely worse after the use of these measures. Extremes of temperature are to be avoided, and heat may be as harmful as cold. Heat increases the metabolism of the tissues, which then require more blood, and, while vasodilatation is also produced by the heat, the impaired vessels are not able to supply sufficient blood for the added demand.

THE ADMINISTRATION OF SODIUM CITRATE

Sodium citrate was given from the beginning of treatment in all cases presenting severe symptoms, and it was given in other cases when improvement did not follow the foregoing dietary regimen. It was administered by mouth when it was not feasible to give it by vein.

Sodium citrate reduces the viscosity of the blood, but the mechanism that brings this about is unknown.

Decreases in viscosity of from 1 to 2 points, which lasted for twenty-four hours or longer, followed the intravenous injection of 250 cc. of a 2 per cent solution of sodium citrate. Viscosity readings were not repeated in all the cases, but in some after a course of injections the reduction was apparently permanent, while in others the viscosity was lowered only during the period of injections and returned to its previous high level when injections were discontinued.

The normal viscosity ranges from 4 to 5.5 (average 4.5) while the range in our cases of arteriosclerosis and thrombo-angiitis obliterans was from 5.4 to 8 (average 6.5). Measurements were made with the Hess viscosimeter, in which columns of blood and water are compared in capillary tubes.[1]

The benefit from the administration of sodium citrate in these two forms of peripheral vascular disease apparently does not come only from its effect on viscosity. In some cases, with initial viscosity readings within normal range, relief of symptoms speedily followed its use. Other chemical changes are produced by sodium citrate in the body, such as lowering of the fibrinogen of the blood and increasing the excretion of calcium, but we are without knowledge of their possible influence. Contraindications to the use of sodium citrate by vein are auricular fibrillation and cardiac disease with decompensation. Some hold the opinion that intravenous therapy is contraindicated in diabetes, but in some of the cases with this complication the good effects that followed the use of sodium citrate—relief of pain, healing of ulcers—were especially prompt in occurrence, and in none of the cases were any ill effects noted.

Unpleasant reactions—chills, fever, nausea and vomiting—may occur after the giving of sodium citrate as they do after the administration of other substances

TABLE 2.—*Analysis of Cases*

	Arteriosclerosis (99 Cases)	Thrombo-Angiitis Obliterans (54 Cases)
Age of onset	Average: 56.1 years (32 to 83 years)	Average: 35.2 years (17 to 44 years)
Duration of symptoms	Average: 2.4 years (5 weeks to 20 years)	Average: 4.2 years (3 weeks to 13 years)
Duration of treatment	Average: 1 year (2 mos. to 2.4 years)	Average: 1.3 years (2 mos. to 8 years)
Sex	Male....86 Female....13	Male....52 Female.... 2
Religion	Christian....48 Jewish....51	Christian....25 Jewish....29
Native country	U. S. A....32 Russia....27 Germany.... 9 Austria.... 6 Hungary.... 4 Italy.... 1 Poland.... 7 England.... 3 Ireland.... 3 France.... 1 Czechoslovakia.. 1 Canada.... 1 Rumania.... 3 Albania.... 1	U. S. A....23 Russia....12 Germany.... 2 Austria.... 2 Hungary.... 4 Italy.... 5 Poland.... 4 England.... 1 Ireland.... 1

TABLE 3.—*Complications*

	Arteriosclerosis (99 Cases)	Thrombo-Angiitis Obliterans (54 Cases)
Hypertension (blood pressure 150+)	56	3
Hypotension (blood pressure 110—)	6	9
Coronary disease	12	0
Auricular fibrillation	2	0
Hemiplegia	2	0
Diabetes	13	2
Syphilis	3	0
Ulcer (gastro-intestinal)	4	0
Trauma	2	0
Frost-bite	1	0
Paralysis agitans	1	0

TABLE 4.—*Oscillometric Readings*

	Foot	Ankle	Calf	Thigh	Wrist	Arm
Normal	1-2	2-3	3-5	5-8	2-3	3-6
Arteriosclerosis	0-½	0-½	0-4	0-4	½-1	1½-2
Thrombo-angiitis	0-½	0-½	0-3	0-4	½-1½	1-2½

Divisions on Oscillometer

A reading of 1 signifies a swing of the oscillometer needle from 1 to 2, or from 2 to 3. A reading of 3 means a swing from 1 to 3, or from 3 to 5; 3 means a swing from 1 to 4.

1. Substitution of a mouthpiece for the rubber bulb on this instrument makes the handling of the test easier and the readings more accurate.

by vein, because of too speedy injection or insufficient cleaning of new rubber tubing, and they may also occur as a result of the method of preparing the solution.[2] These reactions, however, are avoidable, and no ill effect has occurred following daily injections given for many months. In one case as many as six injections a week for six months were given. In a few cases relief of pain dramatically followed two or three injections of the sodium citrate, but the average course consisted of three injections a week for about three months. In the beginning of treatment of the severest cases, daily injections of 250 cc. were given. These were reduced to three or two a week as improvement progressed. The solution was given at a rate of from 7 to 8 cc. per minute, an injection time of from thirty to thirty-five minutes for 250 cc.

TABLE 5.—*Thrombo-Angiitis Obliterans (Results of Treatment)*

	Foot		Ankle	
	Increase	Decrease	Increase	Decrease
To a trace*	16	0	0	0
To ⅛	7	2	4	0
To ¼	11	1	14	6
To ½	2	..	20	0
To 1	..	..	12	4
To 1½	..	..	3	0
To 2	..	..	..	0

* A trace is a reading of definite pulsations.

TABLE 6.—*Arteriosclerosis (Results of Treatment)*

	Foot		Ankle	
	Increase	Decrease	Increase	Decrease
To a trace	19	5	2	2
To ⅛	12	2	9	2
To ¼	14	6	25	6
To ½	11	2	20	7
To 1	..	..	16	..
To 1½	..	..	4	1
To 2	..	..	..	1
To 2+	..	..	2	1

ANALYSIS OF CASES

Ninety-nine cases of arteriosclerosis of the extremities and fifty-four cases of thrombo-angiitis obliterans have been treated according to the method described and have been followed from six months to three and one-half years.

Eighty-three patients in the arteriosclerotic group and all the patients with thrombo-angiitis obliterans smoked tobacco.

X-RAY EXAMINATION

X-ray examination of the vessels of the extremities was made in only twenty-two of the cases of arteriosclerosis. Of these, seventeen showed marked calcification of the vessels. Only twelve cases of thrombo-angiitis were so examined, and calcified vessels were seen in only one case.

OSCILLOMETRIC READINGS

The oscillometer determines the amplitude of arterial pulsation in a limb. Measurements are taken at the foot, ankle, calf, thigh, wrist and arm. Table 4 shows the range of oscillometric readings in the normal individual and in patients with arteriosclerosis and thrombo-angiitis obliterans in this series.

Oscillometric readings were reduced at the foot and ankle in all but three cases, or 98 per cent, and in these the disease was confined to the digital vessels. When symptoms occurred in one extremity only, readings were usually diminished in the other as well, though to a lesser extent. The upper extremities were involved in three cases of thrombo-angiitis obliterans (5.5 per cent) and in one case of arteriosclerosis 1.01 per cent).

We have analyzed the oscillometric readings according to the number of determinations rather than according to the number of cases because of the differences so frequently found between the two extremities in the same individual.

In the cases of thrombo-angiitis 160 determinations were analyzed. Of these seventy-five were at the level of the foot and eighty-five at the level of the ankle. Following treatment they showed thirty-six increased, three decreased and thirty-six unchanged at the level of the foot, and fifty-three increased, ten decreased and twenty-two unchanged at the level of the ankle. The range of increase or decrease may be seen in table 5.

TABLE 7.—*Distribution of Increases in Readings*

Increase from Initial Reading of Zero to	Foot	Ankle
A trace	19	3
⅛	6	3
¼	3	3
½	0	1
	28	10

TABLE 8.—*Type of Symptoms and Response to Treatment*

	Thrombo-Angiitis Cases	Arteriosclerosis Cases
Pain on effort	54	99
Improved	42	85
Unimproved	12	14
Pain at rest	36	36
Improved	29	32
Unimproved	5	4
Ulcer	24	7
Improved	20	6
Unimproved	4	1
Gangrene	1	2
Improved	0	1
Unimproved	1	1

It may be seen that the largest number showed increases varying from a trace to one fourth at the foot, and from one fourth to 1 at the ankle.

There were thirty initial readings of zero at the foot level. Of the thirty readings, twenty-two were increased and eight were unchanged. Of the increased readings, sixteen increased to a trace, five increased to one eighth, and one increased to one fourth.

2. The following method of preparing sodium citrate was developed after considerable experimenting and is entirely satisfactory. Materials: (1) sodium citrate, c. p. tested purity, (2) sodium chloride, c. p. tested purity, (3) potassum biphosphate, monobasic, c. p. tested purity, (4) freshly distilled water, (5) "hardened" filter paper No. 575, Schleicher & Schull, (6) suction flask, with metal filter cone (Berkefeld filter may be used instead of the filter paper).

Method: 1. Dissolve 80 Gm. of the sodium citrate and 12 Gm. of the sodium chloride in 4 liters of freshly distilled water. 2. Allow to stand for thirty minutes. 3. Test the p_H. If the p_H lies between 7.2 and 7.6, proceed to the filtration. If not, adjust by the addition of a small amount (tip of a teaspoon) of potassium biphosphate, mix thoroughly, let stand for thirty minutes, read the p_H, and repeat adjustment if necessary. 5. Filter. 6. Pour into liter flasks. 7. Autoclave (15 pounds pressure, for twenty minutes). 8. Inspect each bottle immediately before using for cloudiness or "floaters." The citrate solution is filtered under suction until clear of "floaters," then poured into liter flasks, which are covered with glass or metal caps fitting closely over the long necks of the flasks. The flasks are then autoclaved. After autoclaving the solution may be kept in the liter flasks for several months.

In the cases of arteriosclerosis there were 263 determinations: 121 at the level of the foot and 142 at the level of the ankle. They showed, after treatment, fifty-six increased, fifteen decreased and fifty unchanged at the level of the foot, and seventy-eight increased, twenty decreased and forty-four unchanged at the level of the ankle. The range of increase or decrease is given in table 6.

TABLE 9.—*Correlation Between Severity of Symptoms and Improvement*

Thrombo-Angiitis Obliterans					Arteriosclerosis				
		(20.3%)	(79.6%) Improved				(16.1%)	(83.8%) Improved	
Cases	Severity	Unimproved	*	**	Cases	Severity	Unimproved	*	**
15	+	4	8	3	51	+	9	41	1
15	++	3	12	0	38	++	4	28	6
24	+++	4	17	3	10	+++	3	5	2
		11	37	6			16	74	9
Amputations = 2, 1 above the knee, 1 of a toe					Amputations = 3 above the knee				

TABLE 10.—*Relationship Between the Duration of Symptoms and the Degree of Improvement*

	Thrombo-Angiitis Obliterans			Arteriosclerosis		
		Improved			Improved	
Duration of Symptoms	Unimproved	*	**	Unimproved	*	**
0-3 months	0	2	1	4	6	0
6 months	2	2	0	3	11	0
1 year	3	7	2	1	19	3
2 years	1	7	0	5	15	2
3 years	1	6	1	1	7	1
5 years	1	5	0	1	6	2
10 years	0	4	1	0	5	0
10+ years	3	4	1	1	5	1
	11	37	6	16	74	9

These results are similar to those in thrombo-angiitis, except that in this group changes up to one half occurred in 8 per cent of the readings, while in thrombo-angiitis they occurred in only 2 per cent. There were forty-three initial readings of zero at the foot level and eleven at the ankle. Increases occurred in twenty-eight of the forty-three readings and in ten of the eleven. They were distributed as in table 7.

These tables show that initially reduced readings did not improve enough to be classed within the normal range, except at the ankle in two cases of arteriosclerosis. When the intial readings were zero, the majority increased to a trace only.

Readings at the foot and ankle were taken every three to six months under as nearly like conditions as possible. They were taken as the last part of the examination of the patient when he was relaxed and at ease and when the extremities were warm. Warm baths or blankets were used to raise the temperature of persistently cold extremities.

Reduction in oscillometric readings, in the presence of normal cardiac output and blood pressure, may be correlated with diminished distensibility of the blood vessels. Under these conditions decreased dilatation is due either to vasospasm or to changes in the vascular walls with loss of their elasticity.

For the most part the cases with oscillometric readings of zero presented the severest symptoms. Blood pressure, however, was seen to exert a modifying influence on this relationship. Among those with readings of zero were several elderly persons with elevated blood pressure, whose extremities were warm and showed only slight color changes, and who had pain only on exertion. In these cases the high blood pressure increased the flow of blood through patent though narrowed and undilatable vessels, so that the supply was evidently adequate for a state of rest. On the other hand, some of the cases with only moderately reduced oscillometric readings presented severe symptoms. In these cases the blood pressure was too low to supply a sufficient onward thrust to the blood for proper nutrition of the extremities, even though some vessels were still capable of dilatation.

Increase in oscillometric readings cannot always be correlated with improvement in symptoms. Improvement in symptoms depends on increase of blood flow to the affected parts, which may be brought about by relief of vasospasm, widening and increase in number of small vessels (development of collateral circulation), increase in blood pressure, increase in blood volume and decrease in blood viscosity.

In the presence of narrowed vessels, incapable of dilating, improvement in symptoms may follow changes in the quality or increase in the volume of the blood, and in such cases oscillometric readings would not be increased. On the other hand, oscillometric readings might increase, but not sufficiently to be accompanied by any marked improvement in symptoms. This occurred in eight cases of thrombo-angiitis obliterans and in ten cases of arteriosclerosis.

TABLE 11.—*Effect of Patient's Age on Improvement*

Thrombo-Angiitis Obliterans				Arteriosclerosis			
		Improved				Improved	
Age, Years	Unimproved	*	**	Age, Years	Unimproved	*	**
15-25	0	0	1	25-35	0	1	0
26-35	4	10	2	36-45	1	6	0
36-45	5	19	3	46-55	4	20	4
46-55	2	8	0	56-65	9	33	2
	11	37	6	66-75	1	14	3
				76+	1	0	0
					16	74	9

TABLE 12.—*Results of Treatment*

	Thrombo-Angiitis Obliterans			Arteriosclerosis		
		Improved			Improved	
	Unimproved	*	**	Unimproved	*	**
Diet only	0	4	1	1	24	6
Diet plus sodium citrate by vein	8	26	5	10	28	3
Diet plus sodium citrate by mouth	1	3	0	3	16	0
Diet plus calcium by vein	0	0	0	0	2	0
Diet plus sodium citrate and calcium by vein	2	4	0	2	4	0

SYMPTOMS

The cases of thrombo-angiitis obliterans and those of arteriosclerosis presented like symptoms—pain on effort (including intermittent claudication), pain when at rest, ulcer and gangrene. We have analyzed these symptoms in terms of severity, type and response to treatment. Other symptoms that frequently occurred in both

groups were swelling, numbness, tingling and coldness of the extremities. Severity was reckoned as

+ = pain on walking more than one block (200 feet).
++ = pain on walking less than one block, and/or when at rest.
+++ = ulcer or gangrene.

Of the patients with thrombo-angiitis obliterans, fifteen were classified as +, fifteen as ++ and twenty-four as +++ severity. Of those with arteriosclerosis, fifty-one were classified as +, thirty-eight as ++ and ten as +++ severity.

Improvement in symptoms was reckoned as

* = absence of pain when at rest, ulcers healed, some increase in walking distance.
** = absence of pain when at rest, ulcers healed, marked increase in walking distance.

Correlation between severity of symptoms and improvement is shown in table 9.

Of the unimproved cases in the two groups, only four and three respectively presented the severest symptoms.

Table 10 shows the relationship between the duration of the symptoms and the degree of improvement.

In thrombo-angiitis obliterans, improvement failed to occur in three long-standing cases in which symptoms had existed for more than ten years. On the other hand three cases with symptoms of one year's duration and two cases in which symptoms had been present for only six months likewise failed to show improvement. In arteriosclerosis thirteen of the sixteen failures occurred in cases presenting symptoms ranging in duration from only three months to two years. These results indicate that duration of symptoms did not exert marked influence on improvement.

The effect of the patient's age on improvement is shown in table 11.

In forty-three of the fifty-four cases of thrombo-angiitis obliterans, symptoms appeared in the second, third and fourth decades. Nine of the eleven failures were in this group. Of eight cases in which symptoms appeared in the fifth decade, only two failed to improve. In the arteriosclerotic group only one of eighteen cases in which symptoms appeared in the sixth and seventh decades did not improve. Advance in age in this series of cases did not prevent improvement of symptoms.

RESULTS OF TREATMENT

The results of treatment have been analyzed as shown in table 12. The dietary regimen and proper physical care, including Buerger's exercises, soaks and the like, were used throughout in all the cases. In addition, sodium citrate was given in the severe cases from the beginning of treatment and in other cases when improvement did not follow diet alone. In a few cases presenting persistent cramp, calcium was given by vein. In addition to the treatment outlined, sedatives were freely used for pain when necessary. Acetylsalicylic acid 0.6 Gm., with codeine 0.06 Gm., given once or twice a day, proved adequate in most of the cases.

It was not always possible to foretell how soon improvement might be expected. Some of the cases presenting ulcer or gangrene, in which early improvement seemed unlikely, showed remarkably speedy response to treatment. In some of the other cases improvement did not occur for from four to six weeks or even longer. Accordingly, unless symptoms actually became worse, treatment was continued in some cases for from two to three months, until it appeared reasonably sure that improvement would not take place.

REPORT OF CASES

The following cases have been selected as examples of their kind and for their response to treatment.

CASE 1.—S. R., a man, aged 83, in fairly good physical condition, complained of severe cramps in both legs for the past six months. His past history was negative except for a deficient diet. He smoked six cigars a day. For the past three months he had been able to sleep only with sedatives. He was unable to walk more than half a block without pain. His feet were cold and white. Previous treatment with massage, diathermy and hot and cold contrast baths did not improve his symptoms. X-ray examination of the vessels of both lower extremities showed considerable calcification. The dorsal pedal and posterior tibial arteries were not palpable. The oscillometric readings were reduced throughout both lower extremities. He was given the dietary regimen, 2.5 Gm. of calcium lactate orally, Buerger's exercises three to four times a day, warm soaks twice a day, and acetylsalicylic acid 0.6 Gm., with codeine sulfate 0.06 Gm. at night, when necessary. Smoking was prohibited. He was instructed to return to the clinic in two weeks. At that time injections of sodium citrate were to be given if improvement did not follow. These injections, however, were not necessary, since after four days the pain at night was entirely gone, he could walk several blocks without pain, and at the end of two weeks he was completely free from symptoms. The oscillometric readings had increased nearly to normal and both dorsal pedal and posterior tibial arteries were

TABLE 13.—*Oscillometric Readings (Case 2)*

	Foot		Ankle		Calf		Thigh	
	Right	Left	Right	Left	Right	Left	Right	Left
4/ 2/34.....	0	0	¼	0	1	Tr.	2	1½
12/17/34.....	0	0	¼	Tr.	2	¾	—	—

TABLE 14.—*Oscillometric Readings (Case 3)*

	Foot		Ankle		Calf	
	Right	Left	Right	Left	Right	Left
9/19/32.....	¼	⅛	1¼	¾	3½	3½
3/ 8/33.....	¾	¾	2	1	4	4

palpable. In spite of this man's age and x-ray evidence of calcified vessels, the predominating factor in this case was evidently vasospasm, which responded to treatment with dramatic quickness.

CASE 2.—J. B., a machinist, aged 70, had always been in excellent health until his present illness, which began three years previously with the symptom of intermittent claudication if he walked more than one block. This increased in severity. Two years later he began to have cramps in his calves at night. Three months before admission a dark spot appeared on the medial side of the left great toe and another over the lateral aspect of the same foot. These increased in size and the foot became painful and swollen. Both feet were cold and the left, when dependent, was a purplish red. He was admitted to the surgical pavilion. The popliteal and dorsal pedal arteries were not palpable, Buerger's sign was positive and the oscillometric readings (table 13) were markedly diminished. There was an area of dry gangrene extending from the base of the nail of the left great toe to its distal end under the nail, 2.5 by 2 cm. in diameter. There was another gangrenous area about 2 cm. in diameter over the prominence of the cuboid bone. The urine showed albumin, casts and sugar. The blood sugar was 0.221 Gm. per hundred cubic centimeters (normal, 0.07 to 0.09). The dismissal note from the surgical pavilion read "Patient has been treated with alcohol dressings, heat and negative pressure without change in local lesions. Diabetes controlled with diet and small doses of insulin. Patient advised to have amputation of left leg. Patient refused." He was then referred to the clinic for peripheral vascular diseases. He was given the dietary regimen (with only 1½ pints of milk), 2.5 Gm. of calcium lactate and the exercises. He also received sodium citrate by vein, 150 cc. in the first injection and thereafter 250 cc. every day and then every second day until he had

had fifty-six injections. After the second injection he was able to sleep at night without pain. Until then he had been kept awake with pain, sedatives giving him only short relief. After the sixth injection his foot was definitely improved. After the nineteenth injection the lesions were dry, shrunken and well demarcated. Healing was complete in four months. The patient now walks without discomfort if he walks slowly.

CASE 3.—E. M., a housewife, aged 53, had had for five years a dull ache in the left foot, which became worse on walking. The pain was not entirely relieved by rest and frequently spread upward, involving the leg and thigh. She complained of numbness and tingling in the hands, and both feet and hands became blue in the cold.

TABLE 15.—*Oscillometric Readings (Case 4)*

	Foot		Ankle		
	Right	Left	Right	Left	
11/ 2/34.....	0	0	¼	Tr.	
2/ 1/35.....	Tr.	Tr.	⅝	⅛	After 1st course of citrate
7/ 8/35.....	⅛	Tr.	1	⅛	After 2d course of citrate
11/13/35.....	Tr.	Tr.	½	Tr.	After period of no injections
4/20/36.....	¼	⅛	¾	¼	After injections of calcium

At the age of 12 years she had received buckshot wounds in the popliteal space of both legs. For many years she had suffered from peptic ulcer, varicose veins and constipation. For four years she had known that her blood pressure was high. Her treatment had consisted of diet for the peptic ulcer, phenobarbital for nervousness and high blood pressure, epsom salt for constipation, and massage and baking of both upper and lower extremities.

Examination on admission to the clinic showed extremities that were normal in color but cold even though the day was warm. There were a few tender spots along the muscles of the leg and about the ankles. Pulsations of the dorsal pedal arteries were palpable but faint. The oscillometric readings (table 14) were diminished. The nails showed trophic changes. The skin was dry, The blood chemistry and urine were normal. The blood pressure was 220 systolic, 106 diastolic. The blood viscosity was 6.5. X-ray films of the extremities showed multiple small foreign bodies of metallic density in the region of both knee joints. The report stated that they were probably gun shot. The vessels of both legs were calcified. Treatment in the clinic consisted of the dietary regimen, exercises and soaks, and sodium citrate by mouth. There was no improvement after three weeks of this schedule. Sodium citrate was then given by vein. After ten injections there was complete relief of pain in the legs, her hands and feet were less cold, and the numbness had disappeared. She had no digestive discomfort, and the bowels were regular with lactose. The blood pressure was 150 systolic, 110 diastolic. The blood viscosity was 5.2. She has required no further injections and is doing well on the dietary regimen and Buerger's exercises.

TABLE 16.—*Oscillometric Readings (Case 5)*

	Foot		Ankle		Calf		Thigh	
	Right	Left	Right	Left	Right	Left	Right	Left
On admission	⅜	—	1	0	1½	¼	1½	¾
On dismissal	½	Tr.	1½	⅛	2½	½	2½	1

CASE 4.—B. R., a Russian Jewish merchant, aged 62, had severe pain in the left foot and great toe of one week's duration. For one and one-half years he had intermittent claudication and pain in the left foot on walking one block. He had worried considerably about his health and financial condition during this time; otherwise his past history was negative. Examination showed cyanosis of the left great toe, slow capillary return, trophic changes in the nails, a positive Buerger's sign, reduced oscillometric readings (table 15) in both lower extremities, and dermophytosis of the feet. The blood pressure was 170 systolic, 100 diastolic, and the blood sugar was 0.107 Gm. per hundred cubic centimeters. The patient improved slowly but steadily on oral treatment, the severe pain in the foot disappeared and the color improved. After three months he could walk three blocks instead of one block without pain. After two additional months there was no further improvement. He was then given sodium citrate intravenously. He had forty-six injections during the next two months and improved so that he could walk indefinite distances at a slow pace. Several months after injections were discontinued he again had pain on walking a few blocks. He was again given ten injections of sodium citrate, again felt better and could walk comfortably; he was not seen for two months, when he stated that on some days he could walk well while on others he could not walk more than a block without pain. He was then given ten injections of calcium gluconate (10 cc. of 20 per cent solution) and again improved.

In this case the injections of citrate were followed by increased circulation in the extremities as evidenced by improvement in symptoms and oscillometric readings, but the vasospastic element, apparently considerably influenced by worry on the part of the patient, was not controlled by the dietary regimen alone. About a year after treatment was started, during a period in which he did not receive any injections, his symptoms and oscillometric readings again became worse and were again improved, this time after injections of calcium by vein.

CASE 5.—This is a case of thrombo-angiitis obliterans in a woman, a heavy smoker. L. S., aged 36, had an ulcer on the dorsum of the left foot with severe pain, of four months' duration. Three years before admission she had had "neuritic" pains in both arms for which the etiology was not determined. Six months before admission similar pains developed in the left leg and foot and two months later an ulcer appeared at the base of the left great toe. Treatment previous to admission consisted of rest in bed for about three months, baking, massage and finally local injection around the ulcer (substance unknown) and sedatives for pain. Examination on admission showed an ulcerated area about 4 cm. in diameter on the dorsum of the left foot at the base of the great toe. The tendons and deep structures were exposed, and there was no evidence of granulation. The surrounding skin was a dark bluish red and slightly edematous. The entire foot was cyanotic and cold. The dorsal pedal pulse was not palpable. The right foot was normal in appearance. Both hands showed patchy, erythematous mottling on the thenar and hypothenar eminences. The nails were thickened and there was some atrophy of the finger tips. The radial pulse was not felt on the left but was palpable on the right. Other observations were negative except for moderate obesity. The blood chemistry and basal metabolism were normal. X-ray examination failed to show any local bony changes but did show spotty decalcification throughout the entire foot. Oscillometric readings (table 16) were decreased throughout. Treatment consisted of rest in bed and daily injections of 250 cc. of sodium citrate in addition to the dietary regimen, sedatives and warm soaks. She improved slowly but steadily and was discharged on the ninety-first day after admission with the ulcer markedly reduced in size and nearly healed. At home she did her housework and stated that she did not resume smoking. For two months she was free of symptoms, but the ulcer did not heal entirely. She began to have pain again and the ulcer increased in size. She was readmitted to the hospital. The ulcer measured 1 by 2 cm., and the base was covered with granulation tissue over which was a thin layer of purulent exudate. Treatment was resumed and, when the ulcer was clean, skin grafts were applied but sloughed off, and amputation of the great toe became necessary. The wound was left open and moist dressings were applied. The wound healed slowly and the patient was discharged from the hospital

TABLE 17.—*Oscillometric Readings (Case 6)*

	Foot		Ankle		Calf		
	Right	Left	Right	Left	Right	Left	
4/17/33	0	0	⅛	⅛	4	2	
5/21/33	Tr.	Tr.	¼	½	—	—	
5/12/34	⅛	⅛	½	1	—	—	After last course of treatment
1/13/36	Tr.	Tr.	Tr.	¼	—	—	After worry
6/24/36	Tr.	Tr.	¼	¼	—	—	

on the eighty-seventh day. In fourteen months she has had no further trouble; both upper and lower extremities are normal in color, the left radial pulse is palpable, and she is free from pain.

CASE 6.—A. A., a man, aged 35, an American, a bartender, strong and healthy, a heavy smoker, had been on a diet deficient in calcium. His past history was otherwise negative until nine months before admission when he bruised the second and third toes of the right foot. Two months after this injury the two toes were amputated. The stumps did not heal. He was then admitted to the New York Hospital, where with rest in bed, heat and soaks, healing proceeded very slowly. Healing was markedly speeded up when sodium citrate was given by vein. Examination on admission showed ulceration of the bases of all the toes of the right foot. The remaining three toes were cyanotic and cold. No pulsation of the dorsal artery was felt on the right, while there was a faint pulsation on the left. Oscillometric readings (table 17) were reduced in both extremities. The blood pressure was 120 systolic, 90 diastolic. The blood calcium was 10.8 mg. per hundred cubic centimeters, the blood phosphorus 2.2 mg. and the blood viscosity 7.5. With daily injections of sodium citrate, healing took place in one month. The blood viscosity was reduced to 5.5 and the oscillometric readings were improved. After leaving the hospital he went back to his previous way of living; he resumed smoking and did not follow the dietary schedule. Six months later he returned to the hospital with ulceration of the left great toe. The blood viscosity was again high, 7.2, and the oscillometric readings were again reduced. He was treated in the clinic with another course of injections of sodium citrate. At first injections were given daily, then three times a week until healing occurred. He has since adhered to his diet, does not smoke and was free of symptoms until he lost his job and became much worried. He again had pain on walking a short distance, whereas after his last course of treatment he had walked several miles without pain. Subsequently, although still without work, he had ceased to fret so much about his ill luck, is free from symptoms, and the oscillometric readings, though not so good as before, are improved over those taken during the period of his greatest anxiety.

COMMENT

Since 1913, when Koga [3] in Japan used hypodermoclyses of Ringer's solution to reduce the viscosity of of the blood, which he and Mayesima [4] had found to be high in thrombo-angiitis obliterans, several different medical methods have been used in the treatment of this disease. These methods have aimed to correct abnormal changes in the blood, to increase the blood volume, or to produce peripheral dilatation in other ways. A review of the various treatments is given in a Mayo Clinic monograph [5] on thrombo-angiitis obliterans.

In a study of thirty-two cases of thrombo-angiitis obliterans in the First Medical Division of the old New York Hospital, we found a high blood calcium in twenty-nine and a low blood phosphorus (inorganic) in twenty-five. The calcium ranged from 11.6 to 14 mg. per hundred cubic centimeters, the average being 12.2 mg. The phosphorus ranged from 2.2 to 3 mg. per hundred cubic centimeters, the average being 2.5 mg. Silbert,[6] in a series of forty cases likewise found a hypercalcemia, the average in his cases being 12.4 mg. A retention of calcium also was found in five of our cases in which calcium balance studies were carried out. We were interested to see whether decrease of the high calcium content of the blood and increase in the excretion of calcium would favorably influence the course of the disease. To increase the excretion of calcium we used sodium acid phosphate and sodium citrate. The latter also reduces the viscosity of the blood. We also prescribed a diet low in calcium. On this regimen the calcium content of the blood and calcium excretion became normal, and the viscosity of the blood, high in those cases in which it was determined, was reduced. Symptoms were improved in most of the cases.

In our present group of fifty-four cases of thrombo-angiitis obliterans, while a low blood phosphorus was found in about 78 per cent—as in the former group—a high blood calcium was found in only three cases. No calcium balance studies have been done in the second group. More investigation is necessary before the nature of these observations can be properly evaluated.

In the second group of cases we substituted a high calcium intake for the low one, not only because the blood calcium was not high but because, no matter what the form of disturbance in calcium metabolism might be, it is doubtful whether a calcium intake less than that required for positive calcium balance is ever indicated as a form of therapy for any considerable length of time. The effect of sodium citrate is the same whether the intake of calcium is high or low.

With the use of the high calcium regimen and sodium citrate not only have the clinical results in thrombo-angiitis obliterans been more satisfactory and long lasting than with the low calcium intake but the results in cases of arteriosclerosis have been even better. Reports in the literature show that other medical methods, such as injection of foreign protein and hypertonic sodium chloride solution, have also been successful in the treatment of thrombo-angiitis obliterans, but we have failed to find any reports of similarly good results in the treatment of a series of cases of arteriosclerosis.

The use of sodium citrate is not attended by any ill effects, such as may follow foreign protein therapy and hypertonic sodium chloride injections. Because it increases the excretion of calcium, its prolonged use may result in a deficiency in calcium unless the intake of calcium is adequate. Accordingly, in the long run, the effects of sodium citrate are better when the intake of calcium is high.

A high calcium intake, besides preventing calcium depletion of the body through sodium citrate, exerts an antivasospastic influence and, as Sherman [7] has observed, also produces a beneficial effect on general health. It apparently does not affect the viscosity of the blood adversely, nor does it, as some fear, lead to increased arteriosclerosis.

SUMMARY

1. A rationale of treatment of arteriosclerosis and thrombo-angiitis obliterans is as follows: (1) no tobacco, (2) diet high in calcium and vitamins, (3) the use of sodium citrate in the severe cases, and (4) proper care of the extremities.

2. Of ninety-nine cases of arteriosclerosis, 83.8 per cent showed improvement; of fifty-four cases of thrombo-angiitis obliterans, 79.6 per cent showed improvement.

3. The results show that arteriosclerosis is as amenable to this type of treatment as is thrombo-angiitis obliterans.

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DINITROPHENOL AND DESICCATED THYROID IN THE TREATMENT OF OBESITY

A COMPREHENSIVE CLINICAL AND LABORATORY STUDY

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Within the last three years, dinitrophenol burst upon the medical world with meteoric suddenness. The groundwork was laid as early as 1885,[1] when the effects, on the dog, of dinitro-alpha-naphthol (a compound closely related to dinitrophenol) were studied. Interest in the drug lapsed until the World War, when poisoning of those working with it in munition plants was frequent.[2] Since 1933,[3] when its possibilities, especially in the treatment of obesity, were first spread before physicians, the drug has enjoyed a phenomenal growth in usage. Recently, Tainter [4] has given as an estimate that 100,000 patients are taking, or have taken, dinitrophenol.

A detailed study of the voluminous literature on dinitrophenol reveals surprising gaps in our knowledge of the drug. Although our knowledge of the pharmacology and clinical actions of the drug rests on a secure footing, studies of its clinical pathology are wofully inadequate. Accordingly, this paper presents clinical and laboratory studies on a group of 159 ambulatory obese patients who were selected at random and treated with dinitrophenol.

PHARMACOLOGIC ACTIONS

The basic action is an acceleration of tissue metabolism. The pharmacologic actions are similar in animals and in men.[5] The earliest detectable effect of dinitrophenol administration is an increase in the basal metabolic rate. A single oral dose of from 3 to 5 mg. per kilogram of body weight produces an increase in the basal metabolic rate of from 20 to 30 per cent within the first hour. This level is maintained for twenty-four hours and then falls gradually to normal on the third day.[6] With daily administration there is a rapid rise of the basal metabolic rate on the first day, a slight additional rise on subsequent days, and the maximum on the fourth day. This is in marked contrast with the slow incidence and subsidence of thyroid action. After the dinitrophenol is discontinued, the basal metabolic rate falls to normal within three to fourteen days.[7] The response to a given dose may vary considerably from day to day.[8] If the basal metabolic rate rises less than 30[9] or 40 per cent[10] there is little reaction except peripheral vasodilatation, and a slight increase in respiratory minute-volume. A greater elevation produces uncomfortable heat and sweating. Larger doses may cause a metabolic rise ten times the normal,[11] a rise in metabolism so rapid and extreme that heat production outstrips heat dissipation and the subject may die of hyperthermia.

The fever is a consequence of, rather than the cause of, the metabolic rise.[12] The hyperthermia is not of central origin.[13] It is due to direct stimulation of cellular respiration.[14] The hyperthermia and rise of metabolism are not related to the glutathione content of the tissues, which is considerably reduced.[15] The hypothesis is held quite generally that dinitrophenol, like glutathione, is a respiratory ferment.[16] Metabolic increases have been obtained in various preparations of isolated tissues perfused with suitable concentrations of dinitrophenol.[17] If increasing doses are given, a fairly constant relationship between the size of the dose and the degree of fever is noted. If the drug is administered repeatedly, at intervals of three or more days, no development of tolerance is noted.[18] On the other hand, tolerance is induced toward fatal doses if administered at twenty-four hour intervals.[19] The rate of renal excretion plays an important rôle in determining the total response to dinitrophenol.[20]

The respiratory quotient shows a considerable fall during dinitrophenol medication,[21] in sharp contrast with thyroid, which produces no significant variation. The extra energy of metabolism is derived mainly from fat [22] and practically not at all from protein or carbohydrate. Consequently, dinitrophenol in therapeutic dosage produces no breakdown of significant amounts of body protein, even with patients on an inadequate protein intake.[23] This is in marked contrast with the very considerable increase in nitrogen excretion observed in patients undergoing treatment with thyroid.[9] The fat used is completely and satisfactorily broken down, as no ketone bodies are found in the urine.[24] There is no hyperlipemia or consistent change in the fixed and fatty acids of the blood.[25]

Dinitrophenol effects a marked acceleration of tissue metabolism, resulting in a marked increase of oxygen consumption and hyperventilation. The serum p_H remains within normal limits, the bicarbonate concen-

The laboratory studies were performed chiefly in patients drawn from Dr. Mitchell Bernstein's medical outpatient department at the Jewish Hospital.

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2. Perkins.[70] Guerbert.[21] Mayer.[72]
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7. Looney, J. M., and Hoskins, R. G.: New England J. Med. **210:** 1206 (June 7) 1934. Dunlop.[9] Cutting, Mehrtens and Tainter.[3] Masserman and Goldsmith.[50]
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9. Dunlop, D. M.: Brit. M. J. **1:** 524 (March 24) 1934.
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13. Heymans, C., and Bouckaert, J. J.: Arch. Internat. de pharmacodyn. et de thérap. **35:** 63, 1929. Van Uytvanck, P.: Compt. rend. Soc. de biol. **110:** 992 (June 25) 1932. Bocq, Z.; Brouha, L., and Heymans, C., ibid. **117:** 255 (July 14) 1934. Magne, Mayer and Plantefol.[27] Van Uytvanck.[20] von Euler.[16] Moraes.[14] Cutting, Mehrtens and Tainter.[3] Tainter and Cutting.[12] Tainter and Cutting.[13] Ehrenfest and Ronzoni.[14] Courdouan.[6]
14. Moraes, A.: Compt. rend. Soc. de biol. **109:** 559 (Jan. 30) 1932. Heymans, C.: J. Pharmacol. & Exper. Therap. **51:** 144 (June) 1934. Ehrenfest, Ellen, and Ronzoni, Ethel: Proc. Soc. Exper. Biol. & Med. **31:** 318 (Dec.) 1933.
15. Moraes, H., and Casier, H.: Arch. internat. de pharmacodyn. et de thérap. **45:** 113, 1933.
16. von Euler, U. S.: Arch. internat. de pharmacodyn. et de thérap. **43:** 67, 1932.
17. von Euler, U. S.: Arch. internat. de pharmacodyn. **44:** 464, 1933. Dodds, E. C., and Greville, G. D.: Nature **132:** 966, 1933. Muntwyler, Edward: Proc. Soc. Exper. Biol. & Med. **31:** 621 (Feb.) 1934. Magne, Mayer and Plantefol.[27] von Euler.[16] Moraes and Casier.[15] Ehrenfest and Ronzoni.[14]
18. Tainter, M. L., and Cutting, W. C.: J. Pharmacol. & Exper. Therap. **49:** 187 (Oct.) 1933.
19. Perkins, R. G.: Pub. Health Rep. **34:** 2335 (Oct. 24) 1919. Magne, Mayer and Plantefol.[27] Terada and Tainter.[20]
20. Terada, B., and Tainter, M. L.: J. Pharmacol. & Exper. Therap. **54:** 454 (Aug.) 1935.
21. Dunlop.[9] Cutting, Mehrtens and Tainter.[3]
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23. Pugsley, L. I.: Biochem. J. **29:** 2247 (Oct.) 1935. Fürth, O., and Rapoport, S.: Biochem. Ztschr. **272:** 81, 1934. Cutting, W. C., and Tainter, M. L.: Metabolic Actions of Dinitrophenol, J. A. M. A. **101:** 2099 (Dec. 30) 1933. Markowitz.[82] Robbins.[29] Tainter, Cutting and Hines.[28]
24. Hall, Field, Sahyun, Cutting and Tainter.[11] Dunlop[9]
25. Cahn, T., and Houget, J.: Compt. rend. Soc. de biol. **113:** 587 (June 10) 1933. Magne, Mayer and Plantefol.[27]

tration decreases, and the chlorides increase [26] or remain unchanged.[27] Reports tend to show a marked creatinuria and increased excretion of creatine, as well as an increased fecal excretion of calcium.[28] In this respect dinitrophenol is similar in its effects to desiccated thyroid or thyroxine. There are no significant changes in blood calcium, blood phosphorus or nitrogen balance.[29]

In strong contrast with thyroxine, dinitrophenol has no effect on hypothyroidism, even when the patient responds with an increase in metabolism. The symptoms of myxedema are unalleviated.[30] Dinitrophenol lacks the power of thyroxine to accelerate developmental processes.[31] Apparently the effect of thyroxine on the metamorphosis of tadpoles is not a direct result of the increased metabolism but presumably an independent action.

In the body, after reaching the blood, or even before, dinitrophenol undergoes certain chemical changes into reduction derivatives, which are of varying complexity.[32] Of these the most important is amino-2 nitro-4 phenol, which is found in great abundance in the urine of seriously intoxicated patients and consequently is used as the basis of the Derrien test.[33] The infallibility of this test, which is cited repeatedly in the literature to prove the presence of dinitrophenol poisoning, has been exploded by Bolliger.[33]

ADMINISTRATION OF DINITROPHENOL AND METHODS OF STUDY

The series studied comprised a total of 181 unselected ambulatory obese patients, of whom 159 were given dinitrophenol exclusively or in combination with desiccated thyroid. The effects of diet, combined with desiccated thyroid, were studied in the other twenty-two patients. The patients included three with chronic arthritis, five with syphilis (of whom one had tabes dorsalis), twelve with hypertension (of whom two had advanced chronic nephritis) and four with moderately advanced rheumatic heart disease (of whom two had mitral stenosis). The method employed consisted of the administration of one capsule (100 mg. of sodium dinitrophenol) the first day, two capsules the second day and three capsules daily thereafter (preferably after meals). At the end of one week the patient was reexamined. Thereafter the dose was regulated as was found necessary. Patients were warned to discontinue the drug if marked itching or a skin rash appeared. No attempt at rigid dietary control was made. The patients were merely given general dietary instructions.

Basal metabolism studies were performed in sixty-six cases. Liver function was tested by the determination of the icteric index after the serum was decolorized with dilute hydrochloric acid, by the van den Bergh reaction on the serum, and by the bromsulfalein test (intravenous use of 2 mg. of the dye per kilogram of body weight). Renal function was tested by repeated urine examinations and by the use of the intravenous phenolsulfonphthalein test. Effects on the circulatory system were studied by examination of the pulse, blood pressure and electrocardiographic tracings. Carbohydrate metabolism was studied by means of the fasting blood sugar and the dextrose tolerance test (1.75 Gm. of dextrose orally per kilogram of body weight).

CLINICAL ACTIONS

The chief clinical effects of therapeutically effective doses of dinitrophenol are those of increased heat production. The patient becomes conscious of a sensation of warmth, together with an increase of perspiration. These sensations may be so extreme as to make the patient acutely uncomfortable. A few do not perspire at all. In others, drenching sweats occur, usually at night. In the majority the sweating is generalized. In a considerable minority, the sweating is localized to the physiologic area from the neck upward. Only two patients complained of some dyspnea on exertion, "due presumably to an increased need for oxygen." [34] The majority felt a tremendous improvement in their sense of well being. The temperature, pulse rate and respiration were carefully watched. It was found that the temperature is an excellent guide of impending toxicity. The rule was followed invariably that, when the temperature rose as high as 99.2 F., the drug was either discontinued or the dosage sharply reduced. In this way, many impending reactions were avoided. The temperature usually remained well within normal limits. It was not unusual for the respirations to be increased by as much as ten per minute. The respiratory rate is not a sensitive guide to toxicity. The pulse, as described elsewhere, showed no significant alterations in most patients.

Tolerance to the drug is established rapidly, so that to produce a consistent loss of weight the dosage must gradually be raised. On the other hand, the acquired tolerance is rapidly lost if the drug is discontinued for as short a period as two weeks. The dinitrophenol may then be resumed at a lower dosage level with its original effect on the patient. It is remarkable how sensitive many patients are to a slight increase in the dosage.

It is not unusual for a patient to cease losing weight suddenly after weeks of steady, satisfactory weight loss. Apparently two factors are chiefly concerned. Concrete examples will suffice:

Factor 1 is rapidly acquired tolerance to the drug. Thus, one patient, on a daily dose of 5 grains (0.32 Gm.), resulting in a metabolic rate of + 26 per cent, lost weight at an average rate of 3 pounds (1.4 Kg.) a week for seven weeks. Then, for six weeks, she lost no weight even though the dose was raised to 6 grains (0.4 Gm.) daily. A basal metabolic rate determination at this time was found to be + 6 per cent.

Factor 2 is by far the more important one. Apparently dinitrophenol has a tendency to promote storage of water in the body. For example, a patient on a daily average dosage of 4½ grains (0.3 Gm.), with a basal metabolic rate of + 46 per cent, lost an average of 2 pounds (0.9 Kg.) a week for eight weeks. Then she suddenly stopped losing weight. The dosage was increased to 6 grains (0.4 Gm.) daily for four weeks, with no resultant weight loss. A basal metabolic rate determination at this time was + 62 per cent. Presumably, the effect of the heightened metabolism was masked by the accumulation of water in the tissues. In such cases, merely discontinuing the drug temporar-

26. Muntwyler, Edward; Myers, D. C.; Danielson, W. H., and Zorn, Carla: Am. J. Physiol. **113**: 186 (Sept.) 1935.
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29. Van Uytvanck, P.: Arch. internat. de pharmacodyn. et de therap. **41**: 160, 1931. Robbins, C. L.: J. Nutrition **10**: 187 (Aug.) 1935.
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31. Cutting, W. C., and Tainter, M. L.: Proc. Soc. Exper. Biol. & Med. **31**: 97 (Oct.) 1933.
32. Guerbert, F. C.: Recherche toxical du dinitrophenol et de acide picrique, Paris, 1918, quoted by Hunt.[07]
33. Guerbet, M.: Ann. de physiol. et de phys. biol. **8**: 92, 1932. Anderson, H. H.; Reed, A. C., and Emerson, G. A.: Toxicity of Alpha-Dinitrophenol, J. A. M. A. **101**: 1053 (Sept. 30) 1933. Bolliger, A.: M. J. Australia **1**: 367 (March 17) 1934.
34. Tainter, M. L.; Stockton, A. B., and Cutting, W. C.: Dinitrophenol in the Treatment of Obesity: Final Report, J. A. M. A. **105**: 332 (Aug. 3) 1935.

ily often results in a rapid loss of weight. The drug can then be resumed with its former effectiveness.

In a few patients the water-logging of the tissues becomes so pronounced that frank edema, most evident at the ankles, may result. Careful study of such patients discloses no etiology other than the direct action of the dinitrophenol. Occasionally spectacular results may be obtained by the intravenous use of salyrgan.[35] In one patient, for example, two injections resulted in a loss of 12½ pounds (5.6 Kg.) in one week.

Rapid, large weight changes are very common. They are due chiefly to alterations in the water content of the body. For this reason many patients lose 5 pounds (2.3 Kg.) or more during the first week. The loss of weight often assumes a steplike pattern. "A gain of weight may occur while the body tissue is being consumed, solely because water is being added to the body, and weight may diminish in the face of overfeeding, because depletion of water is also taking place." [36]

TABLE 1.—*Effects of Dinitrophenol on Liver Function*

	Icteric Index					
	Number of Patients	Number of Determinations	Average Value, Units	Duration of Medication, Weeks	Sodium Dinitrophenol Average Daily Dose, Gm.	Sodium Dinitrophenol Average Total Amount, Gm.
Tainter, Stockton and Cutting	14	14	7.6 (4.2-10.0)	0 (Controls)	0	0
Tainter, Stockton and Cutting	17	22	8.2 (4.8-16.3)	4-21	0.3	—
Author	4	4	12.2 (9.0-18.0)	0 (Controls)	0	0
Author	14	30	10.4 (2.5-20.0)	15.5 (3-81)	0.3	34.2 (3.0-245.6)

	Van den Bergh Test						
	Number of Patients	Number of Determinations	Direct Reaction	Indirect Reaction Average Value, Mg.	Duration of Medication, Weeks	Sodium Dinitrophenol Average Daily Dose, Gm.	Sodium Dinitrophenol Average Total Amount, Gm.
Tainter, Stockton and Cutting	45	..	..	0.29* (0.13-0.79)	19 (2-50)	0.3 (0.1-0.6)	36.0 (2-8-122.5)
Author	3	3	Neg.	0.25	0 (Controls)	0	0
Author	15	31	30 Neg.† 1 delayed weakly positive	0.25 (<0.25-0.40)	14.5 (2-81)	0.3 (0.1-0.65)	34.9 (3.0-245.6)

	Bromsulfalein Test					
	Number of Patients	Number of Determinations	Dye Retention at 30 min., per Cent	Duration of Medication, Weeks	Sodium Dinitrophenol Average Daily Dose, Gm.	Sodium Dinitrophenol Average Total Amount, Gm.
Author	15	28	2 (0-<5)	14.5 (2-81)	0.3 (0.1-0.65)	34.9 (3.0-245.6)

* Two patients showed values over 0.5 mg. but there was no demonstrable clinical evidence of liver damage.

† One patient, at the end of four weeks' medication, had an icteric index of 20, direct delayed weakly positive van den Bergh reaction and indirect van den Bergh reaction of 0.25 mg. At eighteen weeks and at twenty weeks, all tests gave normal values.

35. Mazer, Charles, and Goldstein, Leopold: Clinical Endocrinology of the Female, Philadelphia, W. B. Saunders Company, 1933, p. 451.

36. Newburgh, L. H.: The Cause of Obesity, J. A. M. A. **97**: 1659 (Dec. 5) 1931.

A very interesting phenomenon is observed with the change of seasons. As summer passes into fall, it is found that the patient suddenly ceases to lose weight, although the weight loss before may have been very satisfactory and steady. That the mechanism involved is not the development of tolerance is attested by the fact that a considerable group of patients exhibit this phenomenon simultaneously. In the case of dinitrophenol it may be partly accounted for, but only partly, by the diminution of sweating that accompanies the colder weather. In the hot summer months, small doses of dinitrophenol will produce a weight loss that will be matched in the cold winter months only by considerably larger doses. Such loss of the calorigenic power of certain drugs at low temperatures has been known for some time.[37] The proved capacity of low temperatures to abolish and even reverse the calorigenic action of certain substances (endogenous and exogenous in type) has no adequate explanation.

LIVER FUNCTION

It is easily conceivable why dinitrophenol should be suspected of being toxic to the liver. It is closely related chemically to trinitrophenol (picric acid) and other compounds that are liver poisons. Animal experiments in general show no toxic effects on the liver.[38] Postmortem studies of these animals showed no significant damage to the liver following repeated medication with nonfatal, fever-producing doses and with doses ultimately becoming fatal.[39] In human beings the reports are rather meager, but they bear out the view that dinitrophenol is not a hepatotoxin, except in isolated instances.[40] Two cases of poisoning with fatal termination showed moderate congestion, a slight detachment of hepatic cells from one another, and slight fatty infiltration in the periphery of the lobules.[41]

Dinitrophenol often discolors the sclerae and even the skin, thus producing the clinical appearance of jaundice.[42] This occurred, in a marked degree, in seven cases of the present series. The discoloration varies considerably from time to time and usually disappears gradually, even though the medication is continued. To avoid error in the determination of the icteric index, the blood plasma must be acidified.

Tainter, Cutting and Stockton [43] reported a series of cases in which icteric index and van den Bergh studies were done (table 1). Their results show no liver damage. In the present series, fifteen patients were carefully studied with the icteric index, van den Bergh and bromsulfalein tests. A study of table 1 discloses no liver damage even after months of intensive medication. If liver damage was present, one would expect the blood

37. Tainter, M. L.: J. Pharmacol. & Exper. Therap. **51**: 45 (May) 1934. Riddle, Oscar, and Smith, Guinevere, C.: J. Pharmacol. & Exper. Therap. **55**: 173 (Oct.) 1935.

38. Koch, R. A.; Lee, R. C. H., and Tainter, M. L.: California & West. Med. **43**: 337 (Nov.) 1935. Hall, Field, Sahyun, Cutting and Tainter.[11] Tainter, Cutting, Wood and Proescher.[44] Tainter and Cutting.[18]

39. Jonnard, R.: Ann. de méd. lég. **15**: 181 (Jan.) 1935. Hall, Field, Sahyun, Cutting and Tainter.[11] Magne, Mayer and Plantefol.[27] Tainter, Cutting, Wood and Proescher.[44] Koch, Lee and Tainter.[38] Tainter and Cutting.[18]

40. Warthin, A. S.: Bull. 7, Internat. A. M. Museums, May 1918, p. 123. Sidel, Nathan: Dinitrophenol Poisoning Causing Jaundice, J. A. M. A. **103**: 254 (July 28) 1934. Davidson, Elizabeth N., and Shapiro, Matthew: Neutropenia Following Dinitrophenol, with Improvement After Pentnucleotide and Leukocyte Cream, ibid. **103**: 480 (Aug. 18) 1934. Cogan, D. G., and Cogan, Frances C.: Dinitrophenol Cataract, ibid. **105**: 793 (Sept 7) 1935. Dunlop.[9] Rabinowitch and Fowler.[9] Tainter, Stockton and Cutting.[35] Jackson and Duvall.[30] MacBryde and Taussig.[27] Perkins.[19]

41. Poole, F. E., and Haining, R. B.: Sudden Death from Dinitrophenol Poisoning, J. A. M. A. **102**: 1141 (April 7) 1934. Tainter, M. L., and Wood, D. A.: A Case of Fatal Dinitrophenol Poisoning, ibid. **102**: 1147 (April 7) 1934.

42. Haft, H. H.: Toxicity of Dinitrophenol, J. A. M. A. **101**: 1171 (Oct. 7) 1933. Masserman and Goldsmith.[30]

43. Tainter, M. L.; Cutting, W. C., and Stockton, A. B.: Am. J. Pub. Health **24**: 1045 (Oct.) 1934.

bilirubin to increase in proportion to the amount of drug ingested. No such relationship is observed. One patient developed, in the fourth week of medication, an icteric index of 20 and a weakly positive, direct, delayed van den Bergh reaction. The bromsulfalein test was negative. Complete studies at eighteen and at twenty weeks in this case revealed no liver damage. Another patient took the drug almost continuously for eighty-one weeks (consuming a total of 245 Gm.) and showed no liver damage.

The question of delayed liver damage has been inadequately studied. The only report in the literature [43] is one that deals with six patients who showed an average bilirubin count of 0.24 units (0.15-0.40) after the drug had been discontinued for thirty-six weeks.

In conclusion, it seems quite justifiable to state that dinitrophenol, in therapeutic dosage, is not a hepatotoxin, except in the extremely rare case in which there may exist an idiosyncrasy that may mediate damage to the liver.

KIDNEY FUNCTION

Experimental studies on animals show no toxic effects on the kidney.[44] Postmortem examination of the kidneys in these and in other animals dead of dinitrophenol poisoning [45] revealed no significant pathologic changes grossly or microscopically, except mild degrees of cytolysis. Clinical reports on human beings are scattered and in the main bear out the view that dinitrophenol is nontoxic to the kidneys.[46]

Thirty-three intravenous phenolsulfonphthalein tests were performed on fifteen patients. It must be remembered that this test, which is the most widely used of the renal function tests in this country, is subject to wide clinical aberrations.[47] Half the normal renal tissue can be removed without influence on results of the test, so that normal excretion of the dye does not necessarily indicate unimpaired renal function. With these limitations in mind, examination of table 2 reveals no significant impairment of renal efficiency.

Repeated urine examinations were made of these fifteen as well as of five other patients. In nine, no urinary changes occurred. In five a previous albuminuria disappeared or became greatly decreased in amount; in two of the five, casts disappeared. In six patients, who had negative urinalyses at the beginning, a slight albuminuria developed: in four, as medication was continued, the albuminuria disappeared; in the other two it persisted. In short, "It is unlikely that dinitrophenol in ordinary clinical dosage will injure the kidneys." [48]

CARDIOVASCULAR SYSTEM

Dinitrophenol is remarkable for its lack of significant effects on the cardiovascular system even when the basal metabolic rate is raised to high levels. There is no significant change in the pulse rate.[49] In this respect (the absence of relationship between the pulse rate and the basal metabolic rate) dinitrophenol differs from other known accelerators of metabolism. Of a group of eighteen psychotic patients, five showed toxic effects characterized by tachycardia, a fall of blood pressure, and stupor.[50] No similar reports have appeared in the literature on psychotic [51] or nonpsychotic patients.[43] In the present series only one (who became toxic) developed tachycardia. Otherwise the patients showed no significant change in pulse rate.

Many investigators in small series of cases, found no change in blood pressure.[52] Others found a marked difference in the response of hypertensive and nonhypertensive patients. "In patients with normal blood pressure no important change in either systolic or diastolic pressure or in pulse rate has been demonstrated." [53] Hypertensive patients showed a definite fall of both systolic and diastolic pressures; hypotensive patients showed little or no further decrease of blood pressure.[54] Tainter, Stockton and Cutting [34] concluded that such changes in blood pressure as occur are probably due to loss of body weight.

In the present series (181 patients) were twelve hypertensive patients (ten female and two male), of whom ten were placed on dinitrophenol medication. Seven were so-called essential hypertensives, two had chronic nephritis with hypertension dating from neph-

TABLE 2.—*Effects of Dinitrophenol on Kidney Function*

Case	Duration of Medication, Weeks	Sodium Dinitrophenol: Average Daily Dose, Mg. per Kg.	Sodium Dinitrophenol: Average Total Amount, Gm.	Phenolsulfonphthalein Intravenously, per Cent Excretion: 1st Hr.	Phenolsulfonphthalein Intravenously, per Cent Excretion: 2d Hr.
1	0	0	0	70	10
	3	2.4	4.2	55	13
2	0	0	0	35	20
	5	2.2	7.0	55	8
3	0	0	0	70	15
	4	4.2	9.7	35	20
4	17	3.8	33.5	..	30
5*	0	0	0	35	10
	5	4.8	13.3	30	13
6	0	0	0	25	5
	8	5.0	13.3	30	28
	12	3.2	20.1	..	25
	13	3.2	21.2	85	5
7	0	0	0	70	17
	9	5.3	28.5	60	15
	13	4.5	40.4	65	..
	14	4.5	43.2	45	17
8	13	3.9	27.2	55	15
	16	3.9	33.3	60	10
9	14	4.2	35.8	55	7
10*	0	0	0	75	7
	14	4.2	8.3	60	10
11	0	0	0	75	7
	4	2.4	5.4	55	17
12	15	5.4	18.0	80	7
	19	4.2	22.8	50	20
13	0	0	0	60	15
	8	3.1	13.7	60	15
	11	3.1	18.4	40	15
14	0	0	0	60	20
	5	4.7	12.6	60	15
15	60	5.0	158.6	45	15
	81	5.8	245.6	40	20

* Patients with chronic nephritis and hypertension.

44. Tainter, M. L.; Cutting, W. C.; Wood, D. A., and Proescher, Frederick: Dinitrophenol, Arch. Path. **18:** 881 (Dec.) 1934. Schulte and Tainter.[48]

45. Magne, Mayer and Plantefol.[27]

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47. MacKay, E. M., and Rytand, D. A.: Significance of Phenolsulfonphthalein Test of Renal Function, Arch. Int. Med. **55:** 131 (Jan.) 1935.

48. Schulte, T. L., and Tainter, M. L.: Proc. Soc. Exper. Biol & Med. **31:** 1163 (June) 1934.

49. Rosenblum, Harold: Rate of Blood Flow in Patients Receiving Dinitrophenol, J. A. M. A. **104:** 1592 (May 4) 1935. Freeman, Harry: J. Pharmacol. & Exper. Therap. **51:** 477 (Aug.) 1934. Dunlop.[9] Rabinowitch and Fowler.[8] Cutting, Mehrtens and Tainter.[3] Tainter, Stockton and Cutting.[53] MacBryde and Taussig.[67] Tainter, Stockton and Cutting.[34] Tainter and Cutting.[12] Looney and Hoskins.[7]

50. Masserman, J. H., and Goldsmith, Harry: Dinitrophenol, J. A. M. A. **102:** 523 (Feb. 17) 1934.

51. Salmon, A. R.: Presse méd. **43:** 341 (March 2) 1935. Looney and Hoskins.[7]

52. Tainter, Boyes and De Eds.[62] Dunlop.[9] Rabinowitch and Fowler.[8] Tainter, Stockton and Cutting.[53] Rosenblum.[49] MacBryde and Taussig.[67] Tainter and Cutting.[12] Looney and Hoskins.[7]

53. Tainter, M. L.; Stockton, A. B., and Cutting, W. C.: Use of Dinitrophenol in Obesity and Related Conditions, J. A. M. A. **101:** 1472 (Nov. 4) 1933. Stockton and Cutting.[54]

54. Stockton, A. B., and Cutting, W. C.: Clinical Circulatory Effects of Dinitrophenol, J. A. M. A. **103:** 912 (Sept. 22) 1934. Tainter, Stockton and Cutting.[53] Tainter, Stockton and Cutting.[34]

ritic toxemias of pregnancy, and one had a malignant hypertension. In all ten, striking amelioration of the hypertension resulted very rapidly. The blood pressures dropped sharply within one to five weeks. One of the nephritic patients had a drop from 200/156 to 120/80 in three weeks and to 144/88 at the end of two more weeks. Prior to this for eighteen months she had had a hypertension ranging from 180/110 to 230/156, accompanied by severe headaches, dyspnea and dizziness, and irreducible by almost every drug and method in current use for hypertension. She now became asymptomatic for the first time in eighteen months. The blood pressure level stayed down for a few weeks after the dinitrophenol was stopped and then rose again, with a return of the original symptoms. The other nephritic patient's bloodpressure dropped within five weeks from 200/120 to 148/106. In the malignant hypertensive case the pressure fell in one week from 210/120 to 130/100 and at the end of the second week to 130/90.

TABLE 3.—*Effects of Dinitrophenol on Electrocardiogram*

Case	Duration of Treatmeat, Weeks	Total Amount of Sodium Dinitrophenol Ingested, Gm.	Changes in Electrocardiogram
1	16.0	18.0	None
2	81.0	245.6	None
3	3.0	4.2	None
4	20.0	42.2	None
5	5.0	6.8	None
6	2.0	3.3	None
7	13.0	32.2	None
8	17.0	35.6	None
9	11.0	18.4	None
10*	6.0	8.3	Marked sinus arrhythmia with occasional nodal extrasystoles (escape) and auricular extrasystoles
11	0.5	1.6	QRS low voltage, slurred in lead 3, T_2 flattened, T_3 inverted
12	11.0	14.3	Questionable Q wave in lead 3, QRS slurred in leads 2 and 3, T_3 inverted
13	1.0	1.4	QRS questionably slightly slurred
14	6.0	16.0	T_3 inverted, slight RS-T deviation
15	11.0	26.2	Questionable deep Q_3; became deep; Doubtful slurring of QRS_2; became definite; Questionable deviation of RT_2; became deviated upward — Accentuation of slight changes present before medication
16	11.0	28.5	Ventricular extrasystoles developed

* Patient with chronic nephritis and hypertension.

In all three cases there was no reduction in weight. Moreover, these three, together with the other seven in the hypertensive series, showed a very rapid fall of blood pressure. Therefore the assumption [34] that the fall of blood pressure is due to loss of body weight is invalid, and it must be concluded that the hypotensive effect is due to a direct action by the drug on the cardiovascular system.

Typical of the response of the essential hypertensive is one of the patients, a man of 39, who had been a hypertensive since the age of 19 and who had a familial history of hypertension. At the end of two weeks' treatment his blood pressure fell from 166/110 to 148/90 and in one more week to 116/82. In most of the patients the blood pressure rose gradually after the dinitrophenol was stopped, unless there were large, permanent losses of weight.

Bradycardia is an extremely unusual occurrence. It was found in two patients. No similar cases are reported in the literature. In one patient it was associated with latent icterus. The pulse rate dropped steadily from 88 to 56 at the end of four weeks' medication. During the third week the icteric index was 20 and the direct van den Bergh test showed a delayed, weakly positive reaction. The dinitrophenol was not discontinued and the pulse rate gradually rose to normal within a week and remained normal thereafter. Coincidentally the icteric index and van den Bergh reaction returned to normal. In the second patient the pulse rate fell from 88 to 54 in one week and persisted at this level for a week after the drug was discontinued. Some light may be thrown on this case by the work of Gibbs and Reichert,[55] who found that the intravenous injection of dinitrophenol in the dog produces a very marked vagal stimulation of a centric nature.

Phlebitis, no reports of which have appeared in the literature as yet, appeared in a woman during the fifteenth week of medication. For three weeks prior to the onset of the phlebitis she had been developing a peripheral neuritis. First discrete, extremely painful, red nodules appeared along the course of the veins of her left leg. Within a few days the condition became more pronounced and a frank phlebitis ensued. Swelling of the leg developed and became marked. The condition subsided within ten days after the discontinuance of the drug.

"Dinitrophenol possesses no power of depleting the heart of its glycogen and . . . in this respect it differs from thyroxine. . . . In acute poisoning, dinitrophenol causes a marked reduction of liver and muscle glycogen but affects only slightly or not at all the heart glycogen, unless anoxemia surpervenes. . . . In chronic dinitrophenol poisoning the glycogen reserves of the heart, liver and muscle are at normal levels within four hours after the last injection." [56]

ELECTROCARDIOGRAPHIC CHANGES

It is really amazing in view of the widespread use of, and interest in, dinitrophenol that electrocardiographic studies are so meager. Tracings in rabbits [56] and in cats [57] showed moderate changes. Similar changes have been observed in five human beings; [58] no changes were reported in eleven other subjects.[59]

In the present series electrocardiographic studies were made in sixteen patients on prolonged dinitrophenol medication (table 3). In the majority of patients the drug was given for weeks; in one it was given for eighty-one weeks. In nine patients the electrocardiograms showed no changes. In seven there were changes (in practically all, of a minor character), as listed in the table. As Taussig [56] states, such changes indicate the development of a "prolongation of the recovery time of the heart muscle together with a decrease in the voltage initiated by ventricular contraction and suggest that some alteration in the metabolism of the myocardium has resulted from dinitrophenol intoxication. . . . There is no evidence that dinitrophenol causes death through a toxic action on the heart."

CARBOHYDRATE METABOLISM

Most reports show that dinitrophenol produces hyperglycemia in animals, the degree of the response being proportional to the dosage employed.[60] On the other hand, Cutting and Tainter [61] found the blood sugar

55. Gibbs, W., and Reichert, E. T.: Am. Chem. J. **13:** 289, 1891.
56. Taussig, B. L.: J. Pharmacol. & Exper. Therap. **56:** 223 (Feb.) 1936.
57. de Chatel, A., and Motika, J.: Deutsches Arch. f. klin. Med. **176:** 700 (Aug. 22) 1934.
58. de Chatel and Motika.[57] MacBryde and Taussig.[67]
59. Jackson, Harry, and Duvall, A. I.: Dinitrophenol Poisoning, J. A. M. A. **102:** 1844 (June 2) 1934. Rabinowitch and Fowler.[5] Rosenblum.[49] Hitch and Schwartz.[85]
60. Magne, H.; Mayer, A., and Plantefol, L.: Ann. de physiol. et de phys. biol. **8:** 51, 70, 1932. Moraes, A., and Casier, H.: Compt. rend. Soc. de biol. **109:** 561 (Jan. 30) 1932. Heymans, C., and Casier, H.: ibid. **111:** 1078 (Jan. 6) 1933. Ashe, W. F., Jr.: Proc. Soc. Exper. Biol. & Med. **32:** 1062 (April) 1935. Hall, Field, Sahyun, Cutting and Tainter.[11] Heymans and Bouckaert.[12] Cahn and Houget.[35]
61. Cutting, W. C., and Tainter, M. L.: Proc. Soc. Exper. Biol. & Med. **29:** 1268 (June) 1932,

unaltered in animals given large subcutaneous or intramuscular injections, even at the height of the maximum respiratory stimulation. Experimental work performed on diabetic dogs by Tainter, Boyes and De Eds [62] showed that dinitrophenol increases the utilization of carbohydrates and that it is decidedly more toxic in diabetic than in normal dogs. In patients treated with dinitrophenol no change in the fasting blood sugar [63] or a moderate elevation [64] have been reported.

The subject of dextrose tolerance is one that has been in a state of flux for the last few years, and it is only now that new concepts are beginning to be acquired to explain the extraordinary variations found in dextrose tolerance curves. Much doubt is cast on the value of the dextrose tolerance test as at present interpreted.[65] Heretofore there has been no satisfactory method for comparing the different blood sugar tolerance curves. In a series of curves, each under exactly the same conditions for the same individual, great variations occur in the height and time of the peak, and considerable variation occurs in the time taken by the blood to return to "normal" levels. This difficulty has been overcome by Himsworth,[66] who determined that the area enclosed by the blood sugar curve, above the resting level from which it starts, remains constant for the same individual, provided the composition of the diet is maintained constant. Each individual has his own characteristic area for a particular diet. The absolute values of the areas, traced out in different subjects by individual curves obtained on the same diet, vary greatly and are determined by unknown factors peculiar to the individual. For this reason, only curves obtained on the same subject may be compared. Himsworth's method described in 1935 is especially valuable in "borderline" cases, in which the conventional method of judging the tolerance by the height and time of the peak of the curve is of no help.

In estimating the effects of dinitrophenol on carbohydrate tolerance, the criteria used were first its effect on the fasting blood sugar and second its effect on the blood sugar following the ingestion of 100 Gm. of dextrose. The blood sugar curve areas have been plotted in accordance with Himsworth's method, the results being expressed in milligram-minutes (mg./min., tables 4 and 5). This method has been applied not only to the present series but also to that of MacBryde and Taussig [67] and that of Wishnofsky, Kane, Shlevin and

TABLE 4.—*Effects of Dinitrophenol on Dextrose Tolerance in Normal Persons*

		Blood Sugar in Mg. per 100 Cc.														
		Before						After								
	Case	Fasting	½ Hr.	1 Hr.	2 Hr.	3 Hr.	Surface Area (Mg./Min.)	Fasting	½ Hr.	1 Hr.	2 Hr.	3 Hr.	Surface Area (Mg./Min.)	Dextrose Tolerance	Sodium Dinitrophenol, Average Daily Dose (Mg./Kg.)	Duration of Medication (Days)	Total Amount of Sodium Dinitrophenol Ingested (Gm.)
A: Author	1	96	158	125	86	...	2,500	107	172	162	158	...	3,725	D	4.2	5	1.5
	2	91	172	220	168	...	11,050	...	...	...	...	...	.....	..	...	...	....
		94	162	192	115)*	...	7,750	94	136	120	94	...	2,400	I	3.8	105	27.2
	3	80	150	130	115	...	4,000	94	120	115	107	...	1,100	I	3.1	56	13.7
	4	68	111	130	130	...	5,700	107	136	150	111	...	2,801	I	5.4	28	2.4
	5	103	157	176	158	...	6,450	84	126	158	125	...	5,450	I	5.7	56	19.5
		...	...	...	...	...	.....	84	125	143	107‡	...	4,350	I	...	...	....
	6	79	94	115	150	...	2,925	86	118	73	100	...	900	I	4.2	60	6.1
		...	...	...	...	...	.....	100	130	96	81	...	775	I	4.2	108	11.1
	7	75	136	107	96	...	3,900	96	136	115	91	...	2,000	I	5.0	70	17.5
	8	94	125	143	103	...	3,600	115	100	125	130	...	875	I	5.3	63	28.5
		...	...	...	...	...	.....	91	111	136	103	...	3,000	I	4.5	91	40.4
	9	80	150	115	125	...	5,050	91	150	143	130	...	5,000	N	5.0	420	158.6
		...	...	...	...	...	.....	96	150	143	130	...	4,500	N	5.8	560	242.8
	10	91	111	150	136	...	4,525	91	130	176	115	...	5,250	N	4.2	77	26.2
	11	...	...	...	...	...	.....	81	125	77	69	...	1,250	..	2.8	21	4.9
	12	...	...	...	...	...	.....	94	115	150	79	...	2,975	..	2.2	7	1.4
		...	...	...	...	...	.....	94	136	120	100	...	2,400	..	3.9	105	31.0
	13	...	...	...	...	...	.....	91	115	103	125	...	2,400	..	2.7	35	14.1
															(Gm./Day)		
B: MacBryde and Taussig	1	86	114	138	152	112	7,825	83	147	162	187	129	10,075	D	0.3	7	2.1
	2	91	119	146	136	101	5,375	90	119	142	118	112	4,400	I	0.3	7	2.1
	3	94	141	129	113	96	3,850	106	192	210	164	130	11,500	D	0.3	14	4.2
	4	104	164	164	132	104	5,350	99	200	208	124	112	8,950	D	0.3	14	4.2
	5	90	129	146	128	109	6,675	78	139	149	127	116	8,450	D	0.3	14	4.2
	6	94	131	145	122	70	4,750	93	128	139	127	58	4,325	N	0.3	14	4.2
	8	71	123	116	116	54	6,375	78	184	194	165	99	18,800	D	0.3	14	4.2
		...	...	...	...	...	.....	76†	170	182	140	110	15,250	D	...	..	...
	9	85	162	181	100	116	6,900	104	191	255	277	122	16,425	D	0.3	21	6.3
	10	77	114	170	110	97	7,000	106	146	177	157	131	6,925	N	0.3	21	6.3

		Fasting	45 Min.	2 Hr.	Surface Area (Mg./Min.)	Fasting	45 Min.	2 Hr.	Surface Area (Mg./Min.)		Dinitrophenol (Gm./Day)		Total Amount of Dinitrophenol Ingested (Gm.)
C: Wishnofsky et al.	1	93	150	121	5,075	102	205	132	7,850	D	0.25	7	1.75
	2	87	88	104	525	117	123	122	275	I	0.25	7	1.75
	3	100	163	117	4,075	123	205	140	5,200	D	0.25	7	1.75
	4	98	120	102	1,600	125	180	127	3,550	D	0.25	7	1.75
	5	114	176	178	6,325	133	230	182	7,800	D	0.25	7	1.75
	6	120	200	164	6,650	141	214	163	4,975	I	0.25	7	1.75
	7	101	133	114	2,450	120	168	136	3,650	D	0.25	7	1.75
	8	117	132	140	1,775	121	115	166	1,375	I	0.25	7	1.75
	9	99	135	117	2,850	107	163	134	4,525	D	0.25	7	1.75
	10	98	163	121	2,975	115	185	141	4,700	D	0.25	7	1.75

* Nine days apart.
† After omission of the drug for a period of 14 days.
‡ After omission of the drug for a period of 4 days.
D, decreased tolerance; I, increased tolerance; N, no change in tolerance.

62. Tainter, M. L.; Boyes, J. H., and De Eds, F.: Arch. internat. de pharmacodyn. et de thérap. **45**: 235, 1933.
63. Molitch, Matthew: Dinitrophenol in the Treatment of Ichthyosis, Arch. Dermat. & Syph. **32**: 466 (Sept.) 1935.
64. Emmer, V.: Compt. rend. Soc. de biol. **119**: 1137 (April 3) 1935. Dunlop.[9]
65. Glassberg, B. Y.: The Diagnostic Value of the Sugar Tolerance Curve in Endocrinopathies, Arch. Int. Med. **46**: 984 (Dec.) 1930.
66. Himsworth, H. P.: Clin. Sc. **2**: 67 (Sept.) 1935.
67. MacBryde, C. M., and Taussig, B. L.: Functional Changes in Liver, Heart and Muscles, and Loss of Dextrose Tolerance Resulting from Dinitrophenol, J. A. M. A. **105**: 13 (July 6) 1935.

Byron.[68] For example, the accompanying chart shows the graph of patient 6 (table 4 B) in MacBryde and Taussig's series.

Results in Normal Persons.—Of nine patients studied by MacBryde and Taussig (table 4 B), one showed a slightly increased tolerance, two practically no change, and six definitely decreased sugar tolerance (of whom four were very marked). The fasting blood sugar showed no significant change. MacBryde and Taussig[67] report that "the loss of tolerance was evident after seven days and increased in degree with the duration of administration and with the total dose given. . . . No patient showed an increased ability to utilize dextrose." This conclusion is unjustified, as a study of the tolerance areas shows. Thus, patient 9 shows no greater degree of loss of sugar tolerance than does patient 3. Wishnofsky and his co-workers[68] studied ten normal patients. Inspection of table 4 C shows that the fasting blood sugar level was raised significantly above the control fasting blood sugar level, but with no development of hyperglycemia. Of the ten patients, seven showed a decreased sugar tolerance, only three being marked. On the other hand, three showed an increased tolerance. In the present series (table 4 A), thirteen patients were studied. Ten had control dextrose curves. Seven of the ten showed striking increases in dextrose tolerance, the changes being so marked that there can be no question of interpretation; two showed no change in tolerance and one a decreased tolerance. In the remaining three patients of the series (11, 12 and 13), unfortunately no control curves were made. Whether their tolerance remained unchanged, increased or decreased it is impossible to state. But a study of the curves according to conventional methods reveals, at the least, a normal or increased sugar tolerance. There was no significant change in the level of the fasting blood sugar in the series.

Results in Patients with Diabetes Mellitus.—The prevailing opinion holds that the carbohydrate tolerance of diabetic patients is depressed by all measures except moderate exercise, which stimulate the general metabolism.[69] No method of comparing diabetic curves has been devised. One must rely, therefore, on the level of the fasting blood sugar and the peak attained. In three diabetic patients (table 5 B), MacBryde and Taussig[67] found an impaired tolerance, although inspection of the table shows the impairment to be moderate. Wishnofsky and his co-workers,[68] using a statistical method of analysis[70] in a series of eleven cases of mild and moderately severe diabetes and nine cases of severe diabetes (table 5 C), concluded that there was no significant change in the mean values of the fasting blood sugar or dextrose tolerance curves before and after the administration of dinitrophenol. This was true regardless of the severity of the diabetes. Inspection of table

TABLE 5.—*Effects of Dinitrophenol on Dextrose Tolerance in Diabetes Mellitus*

			Blood Sugar in Mg. per 100 Cc.													
			Before						After							
		Case	Fasting	½ Hr.	1 Hr.	2 Hr.	3 Hr.	Surface Area (Mg./Min.)	Fasting	½ Hr.	1 Hr.	2 Hr.	3 Hr.	Surface Area (Mg./Min.)	Dextrose Tolerance	Sodium Dinitrophenol, Average Daily Dose (Mg./Kg.)	Duration of Medication (Days)	Total Amount of Sodium Dinitrophenol Ingested (Gm.)
A: Author....	Prediabetic	1	111	154	188	188	...	2,500	96	150	103	107	...	1,850	I	2.7	28	8.1
		2	79	286	240	143	...	.....	...	...	...	...	...	.....	..	3.2	14	3.2
		3	107	188	240	192	...	.....	...	...	...	...	...	.....	..	3.2	21	6.3
		4	120	200	260	286	...	.....	...	...	...	...	...	.....	..	3.6	42	14.7
	Diabetic	5	136	250	286	176	...	.....	103	214	222	115	...	.....	I	3.1	28	6.1
		6	136	222	272	300	...	.....	115	168	182	262	...	.....	I	2.2	42	15.4
		7	115	182	192	222	...	.....	91	130	130	120	...	.....	I	4.8	42	15.4
		8	172	250	300	300	...	.....	162	188	214	300	...	.....	I	4.7	35	12.6
		9	150	172	272	200	...	.....	...	...	...	...	...	.....	..	2.4	24	4.2
																(Gm./Day)		
B: MacBryde and Taussig	Prediabetic	7	153	224	313	322	262*	.....	153	266	310	408	362	.....	D	0.3	14	4.2
			...	...	...	...	...	.....	180	230	318	330	280‡	.....	D	...	..	...
	Diabetic	11	140	200	210	244	183†	.....	145	228	264	257	248	.....	D	0.3	21	6.3
		12	172	259	312	348	280‡	.....	196	298	312	348	280	.....	D	0.3	14	4.2
			...	...	...	...	...	.....	180	320	360	414	304	.....	D	0.3	28	8.4
			Fasting	45 Min.	2 Hr.	Surface Area (Mg./Min.)		Fasting	45 Min.	2 Hr.	Surface Area (Mg./Min.)				(Gm./Day)		
C: Wishnofsky et al.	Mild and moderately severe cases	1	242	400	428	.....		152	328	336	.....			I	0.3	7	2.1
		2	250	328	364	.....		196	308	384	.....			I	0.3	7	2.1
		3	150	250	300	.....		138	240	250	.....			I (s.)§	0.3	7	2.1
		4	124	364	422	.....		230	360	460	.....			D	0.3	7	2.1
		5	176	256	231	.....		146	242	182	.....			I	0.3	7	2.1
		6	168	300	378	.....		228	352	374	.....			D	0.3	7	2.1
		7	234	356	...	.....		220	328	...	.....			N	0.3	7	2.1
		8	238	410	374	.....		230	405	508	.....			D	0.3	7	2.1
		9	222	378	468	.....		202	300	428	.....			I (s.)	0.3	7	2.1
		10	98	224	264	.....		126	224	296	.....			D (s.)	0.3	7	2.1
		11	224	332	364	.....		244	360	328	.....			D (s.)	0.3	7	2.1
	Severe cases	1	374	526	566	.....		476	600	750	.....			D	0.3	7	2.1
		2	272	410	556	.....		230	422	500	.....			I (s.)	0.3	7	2.1
		3	288	460	516	.....		302	404	516	.....			N	0.3	7	2.1
		4	284	454	428	.....		272	400	508	.....			N	0.3	7	2.1
		5	283	400	385	.....		332	434	526	.....			D	0.3	7	2.1
		6	252	428	440	.....		150	273	268	.....			I (m.)	0.3	7	2.1
		7	340	536	680	.....		272	416	536	.....			I	0.3	7	2.1
		8	364	566	508	.....		248	394	484	.....			I (m.)	0.3	7	2.1
		9	266	384	500	.....		230	348	411	.....			I	0.3	7	2.1

* Prediabetic.
† Diabetic.
‡ After omission of the drug for a period of 14 days.
§ s. indicates slight; m., marked.

68. Wishnofsky, Max; Kane, A. P.; Shlevin, E. L., and Byron, C. S.: Influence of Dinitrophenol on Carbohydrate Metabolism, Arch. Int. Med. **56**: 374 (Aug.) 1935.

69. Dinitrophenol Contraindicated in Diabetes, Queries and Minor Notes, J. A. M. A. **102**: 2135 (June 23) 1934.

70. Fisher, R. A.: Statistical Methods for Research Workers, ed. 3, London, Oliver and Boyd, 1930, p. 104.

5 C shows that of the eleven patients in the mild and moderately severe group five showed an increased tolerance, one no change, and five a decreased tolerance. In the group of cases of severe diabetes, five showed an increased tolerance (two being marked), two no change, and two a decreased tolerance. The level of the fasting blood sugar paralleled the change in dextrose tolerance. In the present series (table 5 A) there were four cases of prediabetes and five of moderately severe diabetes. Studies in one case of prediabetes and four cases of diabetes showed an increased tolerance with a significant, though moderate, decrease in fasting blood sugar.

These three sets of studies are far from agreeing. The only difference is that the studies of MacBryde and Taussig, and those of Wishnofsky and his co-workers, were carried out for short periods of time only (from seven to twenty-eight days). Mine were carried out with fairly prolonged dinitrophenol administration (from twenty-one to 420 days). It is interesting in this connection to note that in patient 1 of the present series (table 4 A), in whom the drug was used only five days, a decreased tolerance was found, in agreement with the results of MacBryde and Taussig and of Wishnofsky and his co-workers. Apparently the conclusions to be drawn are that, with short courses of dinitrophenol administration in normal individuals, there is moderate elevation of the fasting blood sugar level (though not hyperglycemia) and a moderate impairment of carbohydrate tolerance in the majority of cases. With prolonged administration there is no change in the fasting blood sugar and a marked increase of carbohydrate tolerance. In diabetic patients, on short courses of dinitrophenol administration, the results are variable, the dextrose tolerance being apparently increased as often as decreased with parallel changes in the fasting blood sugar. With prolonged administration in cases of diabetes there is apparently an increase of carbohydrate tolerance. The bearing of these results on possible application in the field of diabetes mellitus is self evident. In no case of the three series reported (a total of thirty-two cases of diabetes) was there any evidence of toxicity. This lack of increased toxicity is in startling contrast with the currently held view.[69]

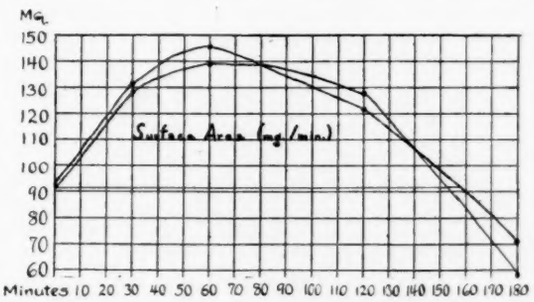
GASTRO-INTESTINAL TRACT

Gastro-intestinal complaints occupy only a minor field in dinitrophenol therapy. Cases of severe gastro-enteritis, anorexia and vomiting are uncommon.[71] In the chronic intoxication of munition workers, the French writers [72] reported anorexia, nausea, vomiting, diarrhea and abdominal pain. In the present series, gastro-intestinal complaints were few and minor. In three cases transient diarrhea developed. An occasional patient vomited at times after swallowing a capsule, evidently on account of gastric irritation. More troublesome was the development of severe "heartburn" in four patients, which was readily controlled by sodium bicarbonate. In general, the clinical effects of dinitrophenol on the gastro-intestinal tract are negligible, except in chronic intoxication.

METABOLIC LEVELS AND BLOOD CHOLESTEROL

Writers are in general accord [73] that the basal metabolic rate in obesity is usually normal. "In a fairly high percentage of obese patients, we have found the inconsistent finding of an increase in the metabolic rate. I find that other investigators have found the same thing." [74] There is little relation between the basal metabolic rate and the degree of obesity.[75] The foregoing statements are substantiated by the results of Tainter, Stockton and Cutting [34] and my results (table 6). The average increase in the basal metabolic rate is roughly 11 per cent for each 0.1 Gm. of the daily dose of dinitrophenol (table 6). Variations in individual patients are marked, however. "Unlike thyroxine, dinitrophenol appears to have about the same effect on metabolism, regardless of the level before treatment . . . an absence of the initial period of intoxication, that follows the administration of thyroxine." [76]

Tolerance is built up rapidly, so that it requires a higher dosage to produce a like increment of basal metabolic rate in a given patient as the drug is administered continuously. It is not unusual for some patients to fail to respond to the highest therapeutic doses with an increase of the basal metabolic rate or loss of weight. In other patients no weight is lost, even though the basal metabolic rate is raised to exceedingly high levels.



Dextrose tolerance curve areas: ordinate, blood sugar in milligrams per hundred cubic centimeters; abscissa, time of dextrose tolerance test in minutes.

In thyroid disease there is a striking inverse relationship between the level of the basal metabolic rate and the blood cholesterol concentration.[77] This relationship does not hold between dinitrophenol and blood cholesterol. Consequently the changes in blood cholesterol present in thyroid disease are not related directly to the metabolic rate but to other actions of the thyroid secretion.[78] The reports on blood cholesterol fluctuation in dinitrophenol therapy are very few and are somewhat conflicting.[79] In a group of thirteen excellently controlled patients, Grant and Schube [80] found in most an initial elevation of blood cholesterol, then a drop below the original level, followed by a gradual return to "normal." In the present series, blood cholesterol determinations were followed in five cases. No consistent results were obtained.

(To be continued)

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78. Cutting, W. C.; Rytand, D. A., and Tainter, M. L.: J. Clin. Investigation **13:** 547 (July) 1934.

79. Dunlop.[9] Emmer.[64] Cutting, Rytand and Tainter.[78] Finkelman and Stephens,[76] Looney and Hoskins.[7]

80. Grant, L. F., and Schube, P. G.: J. Lab. & Clin. Med. **20:** 56 (Oct.) 1934.

Clinical Notes, Suggestions and New Instruments

TULAREMIA FROM THE BITE OF A NURSLING KITTEN

C. L. RUDESILL, M.D., INDIANAPOLIS

The chief interest in this case is the unusual mode of contagion. A woman, aged 59, owned a female cat that had two nursling kittens. The cat had caught a rabbit and had eaten part of it. Within a few days the cat became ill and the kittens also appeared ill two days later. While trying to feed the kittens, the patient was bitten by one of them on the index finger. Both kittens died the following day but the cat slowly recovered.

The patient had enjoyed good health all her life. Three days following the bite by the kitten, she developed headache, malaise and chilliness. On the fifth day the finger became red, swollen and painful. She had a hard chill and a fever of 103 F. Pain and streaks of erythema extended from the finger to the axilla. Large inflammatory glands appeared on the inner aspect of the arm and in the axilla. The fever abated somewhat after a week but was continuous for a period of four weeks. The patient recovered two months after the onset of the illness. The only relevant laboratory observation consisted of serum agglutination of Bacterium tularense. On the thirteenth day agglutination was complete in a dilution of 1:80 and on the seventeenth day in a dilution of 1:640. The white blood count was slightly increased; the urine was normal.

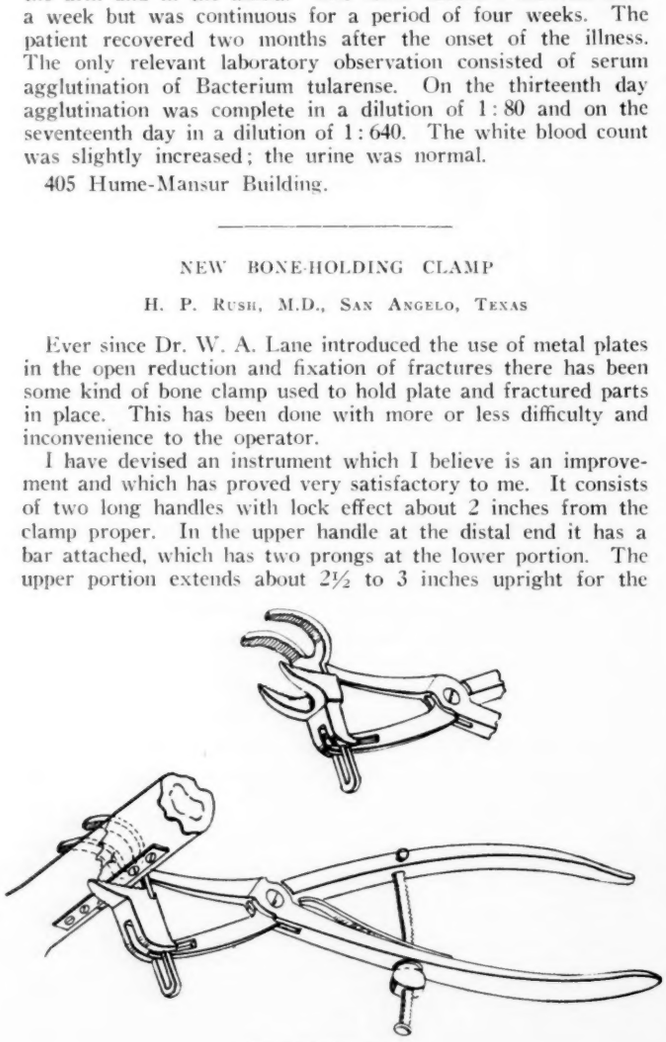
405 Hume-Mansur Building.

NEW BONE-HOLDING CLAMP

H. P. RUSH, M.D., SAN ANGELO, TEXAS

Ever since Dr. W. A. Lane introduced the use of metal plates in the open reduction and fixation of fractures there has been some kind of bone clamp used to hold plate and fractured parts in place. This has been done with more or less difficulty and inconvenience to the operator.

I have devised an instrument which I believe is an improvement and which has proved very satisfactory to me. It consists of two long handles with lock effect about 2 inches from the clamp proper. In the upper handle at the distal end it has a bar attached, which has two prongs at the lower portion. The upper portion extends about 2½ to 3 inches upright for the purpose of carrying the shuttle. The shuttle carries the upper prong at its lower portion to complete the clamp. The shuttle may have two prongs and is interchangeable. In the lower handle there is placed a threaded bar, which is carried through the upper handle with a thumb tap. The distal ends of the handles are curved in such a manner that it allows easy application without pressure on other tissue and gives it, in a way, a retractor effect. The handles are held apart when not in use with a small spring. It is made in three sizes.



Bone holding clamp.

The instrument is easily applied in the transverse manner and in this way does away with the upright handle and allows free use of brace and bit or the screw driver in drilling and applying screws for either bones or metal plates. There is placed in the handle a bar and screw effect which, after the instrument has been applied, may be tightened and the bone and plate held just as snugly and securely as with other bone-holding instruments. Too, it prevents the assistant from being in the way of the operator. By reason of these advantages this instrument, in my judgment, lessens the time of operation considerably, which is advantageous to the patient. The drawing of this instrument illustrates the advantages set forth.

301 Western Reserve Building.

Special Article

TYPHOID IN THE LARGE CITIES OF THE UNITED STATES IN 1936

TWENTY-FIFTH ANNUAL REPORT

In preparing this annual review, data have been obtained from the same ninety-three cities which have been referred to in similar articles for the years beginning with 1930. A communication was addressed to the health officer of each city asking that he furnish the number of deaths from typhoid, excluding paratyphoid, for the year 1936. Furthermore, the health officer was asked to designate not only the total number of typhoid deaths but also subdivide these as to resident and nonresident. Special comment was solicited on any unusual outbreak of typhoid that occurred during the year. In each instance (except Scranton, where the figures come from the Pennsylvania State Health Department) the data were supplied by the respective health departments.

TABLE 1.—*Death Rates of Fourteen Cities in New England States from Typhoid per Hundred Thousand of Population*

	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910	1936	1935	1934
Fall River	0.2*	2.2	2.3	8.5	13.4	13.5	0.9	0.9	0.0
Lynn	0.2	1.5	1.6	3.9	7.2	14.1	1.0	1.0	0.0
Bridgeport	0.3	0.5	2.2	4.8	5.0	10.3	0.0	0.0	0.0
Somerville	0.4	1.3	1.6	2.8	7.9	12.1	0.0	0.0	0.0
Waterbury	0.4	1.2	1.0	8.0	18.8	....	0.0	2.0	0.0
Boston	0.6	1.2	2.2	2.5	9.0	16.0	0.1	0.5	0.9
Worcester	0.6	1.0	2.3	3.5	5.0	11.8	0.0	0.5	0.0
New Haven	0.7	0.6	4.4	6.8	18.2	30.8	1.2	0.0	0.0
Cambridge	0.9	2.1	4.3	2.5	4.0	9.8	0.0	0.0	0.9
Lowell	1.0*	2.6	2.4	5.2	10.2	13.9	1.0	1.0	0.0
Springfield	1.0	0.4	2.0	4.4	17.6	19.9	0.0	0.0	0.0
New Bedford	1.1*	1.5	1.7	6.0	15.0	16.1	1.8	0.0	1.8
Providence	1.1	1.3	1.8	3.8	8.7	21.5	0.8	0.8	1.2
Hartford	1.2	1.3	2.5	6.0	15.0	19.0	0.5	0.6	0.6

*Rate computed from population as of April 1, 1930, as no estimate for July 1, 1933, was made by the Census Bureau.

As the United States Census Bureau is not prepared to furnish an estimate of population for these cities, the health officer was asked to designate the local estimate which he is using in his statistical compilations. A review of these figures as submitted indicates that they do not vary to any great extent from the 1930 census figures, and if there has been a misjudgment in estimating these population figures the error in the rates is

The preceding articles in this series were published in THE JOURNAL, May 31, 1913, p. 1702; May 9, 1914, p. 1473; April 17, 1915, p. 1322; April 22, 1916, p. 1305; March 17, 1917, p. 845; March 16, 1918, p. 777; April 5, 1919, p. 997; March 6, 1920, p. 672; March 26, 1921, p. 860; March 25, 1922, p. 890; March 10, 1923, p. 691; Feb. 2, 1924, p. 389; March 14, 1925, p. 813; March 27, 1926, p. 948; April 9, 1927, p. 1148; May 19, 1928, p. 1624; May 18, 1929, p. 1674; May 17, 1930, p. 1574; May 9, 1931, p. 1576; April 30, 1932, p. 1550; May 13, 1933, p. 1491; May 19, 1934, p. 1677; June 8, 1935, p. 2093, and June 6, 1936, p. 1983.

not significant. In a few instances (as indicated in the footnote of tables 1 to 8) the health department did not furnish a local estimate and the 1930 census figures were used.

As has already been stated, the deaths from paratyphoid have been excluded. A special note has been made in table 9 of cities where all deaths occurred among nonresidents. Another symbol has been used to indicate those cities in which more than one third of the reported deaths were stated to have been among

TABLE 2.—*Death Rates of Eighteen Cities in Middle Atlantic States from Typhoid per Hundred Thousand of Population*

	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910	1936	1935	1934
Jersey City	0.2	0.9	2.7	4.5	7.2	12.6	0.6	0.0	0.0
Newark	0.3	0.9	2.3	3.3	6.8	14.6	0.2	0.0	0.2
Reading	0.4	1.6	6.0	10.0	31.9	42.0	1.8	0.9	0.0
Rochester	0.4	1.7	2.1	2.9	9.6	12.8	0.6	0.3	0.0
Buffalo	0.6	2.7	3.9	8.1	15.4	22.8	0.3	0.5	0.3
Utica	0.6	1.1	3.9*	....	....	....	0.0	1.0	0.0
Yonkers	0.7	0.5	1.7	4.8	5.0	10.3	4.8	1.4	0.0
New York	0.8	1.3	2.6	3.2	8.0	13.5	0.4	0.5	0.6
Syracuse	0.8	0.8	2.3	7.7	12.3	15.6	0.0	0.5	0.5
Elizabeth	0.9	1.6	2.4	3.3	8.0	16.6	0.8	0.0	0.0
Philadelphia	0.9	1.1	2.2	4.9	11.2	41.7	0.7	0.9	0.9
Pittsburgh	0.9	2.4	3.9	7.7	15.9	65.0	0.7	0.6	1.5
Paterson	0.9	1.0	3.3	4.1	9.1	19.3	0.7	0.0	0.7
Erie	1.0	0.9	2.3	6.9	49.0	46.6	0.8	0.0	1.7
Albany	1.1	1.8	5.6	8.0	18.6	17.4	1.5	0.8	0.8
Trenton	1.1	2.1	8.2	8.6	22.3	28.1	0.8	0.0	0.8
Scranton	1.4	1.8	2.4	3.8	9.3	31.5	0.0†‡	0.0†	0.0
Camden	2.8	4.4	5.9	4.9	4.5	4.0	0.8	2.5	1.7

* Incomplete data.
† Typhoid deaths for Scranton furnished by Pennsylvania Department of Health, Harrisburg.
‡ Rate computed from 1930 census population, as no local estimate was given.

nonresidents. The need of giving particular heed to this question of residence is well illustrated in the case of Columbus, where the health department reported twelve deaths from typhoid and stated that all were among nonresidents. Fifty-seven cases occurred at the Columbus State Hospital for the Insane and there were nine deaths in this group. The health officer reports that this institution is not under the jurisdiction of the local health department. There were reported thirty-

TABLE 3.—*Death Rates of Nine Cities in South Atlantic States from Typhoid per Hundred Thousand of Population*

	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910	1936	1935	1934
Baltimore	1.4	3.2	4.0	11.8	23.7	35.1	0.9	1.5	1.3
Wilmington	1.5	3.1	4.7	25.8*	23.2*	33.0	0.9	0.9†	1.9
Jacksonville	1.7	4.4	...	....	....	....	1.3	0.0	1.4
Miami	2.2	3.5	...	....	....	....	3.1	2.8	1.8
Richmond	2.5	1.9	5.7	9.7	15.7	34.0	2.7	2.7	3.8
Washington	2.6	2.8	5.4	9.5	17.2	36.7	1.6	2.6	1.6
Tampa	3.0	3.8	19.1	43.9*	....	....	0.0	6.6	0.0
Norfolk	4.2	2.2	2.8	8.8	21.7	42.1	0.0	5.4†	5.4
Atlanta	7.2	11.1	14.5	14.2	31.4	58.4	3.2	4.6	3.9

* Incomplete data.
† Rate computed from population as of April 1, 1930, as no estimate for July 1, 1933, was made by the Census Bureau.

three deaths in New Orleans and it is stated that twenty-five of these occurred among nonresidents. El Paso reports five out of seven deaths among nonresidents. Houston, with thirteen deaths, has made no separation on the basis of residence.

Six of the large New England cities report no death from typhoid in 1936 (table 1). Bridgeport, Somerville and Springfield report no death for three years in succession. Boston had but one death in 1936 and this is reported as having occurred in a nonresident. The New England cities as a whole (population 2,630,017) again report a new low record of 0.42, which is but 60 per cent of the 1931-1935 quinquennial average.

The Middle Atlantic states have a group rate which is approximately the same as that for the preceding year (0.56 in 1936, 0.55 in 1935). There were no deaths recorded in Utica and Syracuse for 1936, and in Scranton there have been three consecutive years

TABLE 4.—*Death Rates of Eighteen Cities in East North Central States from Typhoid per Hundred Thousand of Population*

	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910	1936	1935	1934
Grand Rapids	0.2	1.0	1.9	9.1	25.5	29.7	0.6	0.0	0.0
Milwaukee	0.2	0.8	1.6	6.5	13.6	27.0	0.3	0.0	0.2
Chicago	0.4	0.6	1.4	2.4	8.2	15.8	0.3	0.4	0.6
Detroit	0.6	1.3	4.1	8.1	15.4	22.8	0.5	0.3	1.1
Flint	0.7	1.6	4.6	22.7	18.8	46.9	1.2	0.6	1.2
South Bend	0.7	...	...	....	....	....	0.0	0.9	1.8
Akron	0.8	1.5	2.4	10.6	21.0	27.7*	0.8	0.7	0.4
Dayton	0.8	1.9	3.3	9.3	14.8	22.5	1.8	1.0	1.0
Canton	0.9	1.4	3.3	8.9	....	....	1.0†	0.9	0.9
Peoria	0.9	0.2	3.7	5.7	16.4	15.7*	1.7	0.0	0.0
Cleveland	1.1	1.0	2.0	4.0	10.0	15.7	1.0	0.6	0.8
Youngstown	1.1	1.1	7.2	19.2	29.5	35.1	1.1	0.0	0.6
Indianapolis	1.2	2.7	4.6	10.3	20.5	30.4	0.8	1.3	1.1
Toledo	1.3	3.0	5.8	10.6	31.4	37.5	1.0	1.3	1.3
Cincinnati	1.4	2.5	3.2	3.4	7.8	30.1	1.9	1.3	1.5
Evansville	1.9	6.2	5.0	17.5	32.0	35.0	0.0	4.7	1.9
Columbus	2.0	2.1	3.5	7.1	15.8	40.0	3.7	2.0	2.0
Fort Wayne	2.2	4.2	12.9	7.3	....	....	0.0	0.0	6.7

* Incomplete data.
† Rate computed from 1930 census population, as no local estimate was given.

without a death. The honor roll list for this group of cities is not quite as good as for 1935, there being but three cities with no deaths, compared with seven in the preceding year. Elizabeth, having successfully passed

TABLE 5.—*Death Rates of Six Cities in East South Central States from Typhoid per Hundred Thousand of Population*

	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910	1936	1935	1934
Louisville	2.3	3.7	4.9	9.7	19.7	52.7	1.4	1.6	2.5
Birmingham	3.9	8.0	10.8	31.5	41.3	41.7	5.0†	4.0	5.8
Chattanooga	4.7	8.0	18.6	27.2	35.8*	....	0.0	2.4	8.1
Nashville	5.6	18.2	17.8	20.7	40.2	61.2	4.4	7.0	2.6
Knoxville	5.7	10.7	20.8	25.3*	....	....	4.1	5.4	0.9
Memphis	7.9	9.3	18.9	27.7	42.5	35.3	4.7	5.0	8.4

* Incomplete data.
† Rate computed from 1930 census population, as no local estimate was given.

through four consecutive years without a death, reports one resident death in 1936. It is stated that the disease was contracted in another state by an Elizabeth resident. The four cities in this group, with a population

TABLE 6.—*Death Rates of Nine Cities in West North Central States from Typhoid per Hundred Thousand of Population*

	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910	1936	1935	1934
St. Paul	0.7	1.4	3.4	3.1	9.2	12.8	0.7	0.3	0.0
Wichita	0.7	1.2	6.3	...	...	....	1.9	0.0	0.0
Minneapolis	0.8	0.8	1.9	5.0	10.6	32.1	0.0	1.2	1.2
Omaha	0.9	1.3	3.3	5.7	14.9	40.7	0.9	0.0	0.9
Duluth	1.0	1.1	1.7	4.4	19.8	45.5	0.0	1.0	1.0
Kansas City, Kan.	1.1	1.7	5.0	9.4	31.1	74.5*	2.3	1.6	1.6
Kansas City, Mo.	1.5	2.8	5.7	10.6	16.2	35.6	0.5	1.0	1.4
St. Louis	1.6	2.1	3.9	6.5	12.1	14.7	0.8	0.7	1.7
Des Moines	2.1	2.4	2.2	6.4	15.9	23.7	2.8	2.1	6.2

* Incomplete data.

of more than half a million, all had rates under 1.0, New York for the fifth consecutive year, Philadelphia and Buffalo for the fourth, and Pittsburgh for the second. Yonkers reports seven resident deaths with no comment regarding any special outbreak. The rate for this city of 4.8 is the highest in the group and is equal

to the rate for the same city for the five years 1916 to 1920. This is in striking contrast to the low rate of recent years. Jersey City records two deaths, both in nonresidents, one a resident of Bayonne, the other of Cliffside. Reading, with two resident deaths, reports an outbreak of twenty-one cases (fourteen resident, seven suburban) traced to a privately owned contaminated well used by a manufacturer in a section of the city recently annexed. Of the thirty-one deaths reported from New York City it is stated that thirty occurred among residents. An outbreak of fifty cases occurred in October 1936, traced to a memorial cake used in a Greek Orthodox Church on September 13.

TABLE 7.—*Death Rates of Eight Cities in West South Central States from Typhoid per Hundred Thousand of Population*

	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910	1936	1935	1934
Tulsa	1.1	8.3	16.2*	....	....	....	0.7†	0.7	2.7
Houston	3.2	4.8	7.6	14.2	38.1	49.5*	3.8	2.2	2.8
San Antonio	4.2	4.6	9.3	23.3	29.5	35.9	2.7	3.3	4.9
Oklahoma City	4.3	7.4*	...	....	....	....	4.3†	2.5	5.9
Fort Worth	4.6	5.9	6.1	16.3*	11.9	27.8	3.3	1.2	5.9
El Paso	4.9	9.1	10.8	30.7	42.8	....	6.8†	7.6	3.8
Dallas	5.4	7.3	11.2	17.2	....	....	1.5†	2.9	4.3
New Orleans	9.6	9.9	11.6	17.5	20.9	35.6	6.5	7.4	8.9

* Incomplete data.
† Rate computed from 1930 census population, as no local estimate was given.

The South Atlantic cities recorded a marked reduction in the death rate for the group as a whole (1.55 in 1936, 2.58 in 1935). Tampa and Norfolk report no deaths. These cities had the highest rate in the group for 1935, 6.6 and 5.4 respectively. Jacksonville's excellent record of no death in 1935 was spoiled by the reporting of two resident deaths in 1936. Atlanta, which has long had a high rate among the cities of this group, has the highest rate again in 1936, although the rate of 3.2 is significantly lower than that of previous years and quinquennial averages. Of four deaths in Miami, three are recorded among nonresidents. Of the ten deaths in Atlanta, five are reported as nonresident. Being a hospital center for the surrounding area, the ratio of nonresident to total deaths in Atlanta has been high for many years.

TABLE 8.—*Death Rates of Eleven Cities in Mountain and Pacific States from Typhoid per Hundred Thousand of Population*

	1931-1935	1926-1930	1921-1925	1916-1920	1911-1915	1906-1910	1936	1935	1934
Long Beach	0.2	1.1	2.1*	...	....	....	0.6	0.0	0.6
Seattle	0.6	2.2	2.6	2.9	5.7	25.2	0.5	0.8	0.0
Tacoma	0.7	1.8	3.7	2.9	10.4	19.0	0.9	0.0	0.0
Los Angeles	0.8	1.5	3.0	3.6	10.7	19.0	1.0	0.9	1.0
Portland	0.8	2.3	3.5	4.5	10.8	23.2	0.6	1.6	0.6
San Francisco	0.8	2.0	2.8	4.6	13.6	26.3	0.3	0.8	0.1
Oakland	1.0	1.2	2.0	3.8	8.7	21.5	0.3	1.7	0.7
Salt Lake City	1.0	1.9	6.0	9.3	13.2	41.1	0.0	1.4	1.4
San Diego	1.3	1.0	1.6	7.9	17.0	10.8	1.8	0.0	1.2
Spokane	1.4	2.2	4.4	4.9	17.1	50.3	0.8	0.8	2.6
Denver	1.8	2.6	5.1	5.8	12.0	37.5	2.0	0.7	1.4

* Incomplete data.

In the East North Central group the rate has again increased to approximately the average for the five year period 1931-1935, not as high however as occurred in 1934. There is in the group but one city with a death rate in excess of 2.0 and, as previously indicated, most of these deaths occurred in a hospital in Columbus. While in 1935 there were five cities in this group with no death, there are but three such cities in 1936, South Bend, Evansville and Fort Wayne. Equally impressive is the reduction in death rate in Evansville (4.7 in 1935, 0.0 in 1936). Nine cases with one death spoiled the admirable record of Grand Rapids, the source of infection being attributed to a bake shop. Cleveland reports that of nine deaths three occurred in the Cleveland State Hospital for the Insane (it should be noted that the health department of Cleveland has included these deaths as residents while in Columbus the health department has recorded nine deaths that occurred in a state hospital for the insane as among nonresidents). Chicago continues to have a very low rate. Milwaukee and Detroit, although low, have not maintained the lower rates of 1935, in which year there was no death recorded in Milwaukee.

The six cities in the East South Central group, while having a lower rate (3.35) than in 1935 (3.94), and lower than the five year average for 1931-1935 (4.81), continues as a group to rank second only to the West South Central group, which has the highest rate (3.99 in 1936). The actual number of typhoid deaths in this group dropped from forty-nine in 1935 to forty-three in 1936. Chattanooga reported no death. With the exception of Chattanooga and Louisville, all the cities had a death rate in excess of four. Louisville reports that of five deaths two occurred among nonresidents; of thirteen deaths in Birmingham, three were among nonresidents; of seven deaths in Nashville, six were among nonresidents; of thirteen deaths in Memphis, five were among nonresidents. This clearly indicates that the cities in this group are serving as hospital centers for the surrounding areas where typhoid continues to be prevalent. The freedom from typhoid in Chattanooga is in striking contrast to the high death rates of previous years.

The West North Central group reports substantially the same number of deaths in the past two years (twenty-two in 1936, twenty-three in 1935). The rate of 0.79 marks a new low for the group. Minneapolis

TABLE 9.—*Death Rates from Typhoid in 1936*

Honor Roll: No Typhoid Death (Eighteen Cities)

Bridgeport	Utica	Evansville
Somerville	Syracuse	Fort Wayne
Waterbury	Scranton	Chattanooga
Worcester	Tampa	Minneapolis
Cambridge	Norfolk	Duluth
Springfield	South Bend	Salt Lake City

First Rank: from 0.1 to 1.9 Deaths per Hundred Thousand (Fifty-Seven Cities)

Boston	0.1*	Pittsburgh	0.7†	Canton	1.0
Newark	0.2	St. Paul	0.7	Cleveland	1.0
Buffalo	0.3	Tulsa	0.7	Toledo	1.0†
Milwaukee	0.3	Providence	0.8	Los Angeles	1.0†
Chicago	0.3	Elizabeth	0.8	Youngstown	1.1†
San Francisco	0.3†	Erie	0.8*	New Haven	1.2
Oakland	0.3	Trenton	0.8*	Flint	1.2
New York	0.4	Camden	0.8	Jacksonville	1.3
Hartford	0.5	Akron	0.8†	Louisville	1.4†
Detroit	0.5	Indianapolis	0.8†	Albany	1.5
Kansas City, Mo.	0.5	St. Louis	0.8	Dallas	1.5*
Seattle	0.5	Spokane	0.8	Washington	1.6
Jersey City	0.6*	Fall River	0.9	Peoria	1.7*
Rochester	0.6†	Baltimore	0.9	New Bedford	1.8
Grand Rapids	0.6*	Wilmington	0.9	Reading	1.8
Long Beach	0.6*	Omaha	0.9*	Dayton	1.8†
Portland	0.6	Tacoma	0.9	San Diego	1.8†
Paterson	0.7	Lynn	1.0	Cincinnati	1.9†
Philadelphia	0.7	Lowell	1.0	Wichita	1.9

Second Rank: from 2.0 to 4.9 (Fifteen Cities)

Denver	2.0	Miami	3.1†	Knoxville	4.1
Kansas City, Kan.	2.3	Atlanta	3.2†	Oklahoma City	4.3
Richmond	2.7	Fort Worth	3.3	Nashville	4.4†
San Antonio	2.7	Columbus	3.7*	Memphis	4.7†
Des Moines	2.8	Houston	3.8	Yonkers	4.8

Third Rank: from 5.0 to 6.8 (Three Cities)

Birmingham	5.0	New Orleans	6.5†	El Paso	6.8†

* All typhoid deaths reported were stated to be among nonresidents.
† One third or more of the reported typhoid deaths were stated to be among nonresidents.

and Duluth report no death. After two consecutive years with no death, Wichita reports two resident deaths. Des Moines, with a rate slightly in excess of that in 1935 but materially lower than that of 1934, continues to rank highest.

The eight cities in the West South Central group, after showing a marked improvement in their rate in 1935, have increased their rate slightly in 1936, there being seventy-nine deaths in 1936, seventy-four in 1935. The group rate of 3.99 is the highest for any group but is materially lower than the rate of 5.43 for this group in 1934 and the rate of 5.36 for the quinquennial average of 1931-1935. There were but two cities in this group with a rate less than 2.0 (Tulsa with 0.7 and Dallas 1.5). There were two cities with a rate in excess of 6 (El Paso with 6.8 and New Orleans 6.5). Of the four deaths reported for Dallas, all are stated to have occurred among nonresidents. The high percentage of nonresident deaths in El Paso and New Orleans has already been referred to. No reference is made by the health officer in any instance to an unusual prevalence or outbreak of typhoid. It is quite likely, as in the instance of the East South Central states, that the urban communities provide hospital facilities for

TABLE 10.—*Number of Cities with Various Typhoid Death Rates*

	No. of Cities	10.0 and Over	5.0 to 9.9	2.0 to 4.9	1.0 to 1.9	0.1 to 0.9	0.0
1906-1910	77	75	2	0	0	0	0
1911-1915	79	58	19	2	0	0	0
1916-1920	84	22	32	30	0	0	0
1921-1925	89	12	17	48	12	0	0
1926-1930	92	3	10	30	37	12	0
1931-1935	93	0	6	17	28	42	0
1930	93	2	6	30	23	22	10
1931	93	2	6	23	28	22	12
1932	93	1	7	13	29	29	14
1933	93	0	7	18	19	33	16
1934	93	0	9	11	27	23	23
1935	93	0	7	15	18	29	24
1936	93	0	3	15	21	36	18

the surrounding areas. Tulsa continues to have the lowest rate in the group, as it has had every year beginning with 1930.

The cities in the Mountain and Pacific states had a reduction in the rate below that of 1935, but not quite as low as 1934. Salt Lake City led the list with no death. There were but two cities with a rate in excess of 1 (San Diego and Denver) and there was no city with a rate in excess of 2. Denver has the unenviable distinction of having the highest rate. Among thirteen deaths occurring in Los Angeles, six were among nonresidents. With two deaths in San Francisco, one was of a nonresident. With this correction for residence, both of the large California cities can boast of an enviable record. Tacoma, after two successive years of freedom from typhoid (the third in its history), reports one resident death.

THE HONOR ROLL

While in 1935 there were twenty-four cities on the honor roll with no deaths from typhoid, there were only eighteen in 1936. Among the cities with a rate from 0.1 to 0.9, the number increased from twenty-nine to thirty-six. This apparently shows the influence of one or two chance deaths from this disease. Bridgeport, Cambridge, Fort Wayne, Scranton, Somerville and Springfield were on the honor roll in both 1935 and 1936.

There were only eighteen cities in 1936 with rates of 2.0 or over, in contrast with twenty-two such cities in 1935 and twenty in 1934. In 1936 there were but three cities with a rate in excess of 5.0, as compared with seven in 1935 and nine in 1934. Comparing the cities by groups (table 12) it will be observed that the high rates are in the Southern states, the medium rates in the Pacific and Northern states, and the lowest rates on the North Atlantic Seaboard and in New England.

TABLE 11.—*Total Typhoid Rate for Seventy-Eight Cities, 1910-1936* *

	Population	Typhoid Deaths	Typhoid Death Rate per 100,000
1910	22,573,435	4,637	20.54
1911	23,211,341	3,950	17.02
1912	23,835,399	3,132	13.14
1913	24,457,989	3,285	13.43
1914	25,091,112	2,781	11.08
1915	25,713,346	2,434	9.47
1916	26,257,550	2,191	8.34
1917	26,865,408	2,016	7.50
1918	27,086,696†	1,824†	6.73
1919	27,735,083†	1,151†	4.15
1920	28,244,878	1,088	3.85
1921	28,859,062	1,141	3.95
1922	29,473,246	963	3.26
1923	30,087,430	950	3.16
1924	30,701,614	943	3.07
1925	31,315,598	1,079	3.44
1926	31,929,782	907	2.84
1927	32,543,966	648	1.99
1928	33,158,150	628	1.89
1929	33,772,334	537	1.59
1930	34,386,717	554	1.61
1931	35,137,915	563	1.60
1932	35,691,815	442	1.24
1933	35,691,815	423	1.18
1934	35,401,715	413	1.17
1935	35,401,715	348	0.98‡
1936	36,216,404	342	0.94§

* The following fifteen cities are omitted from this table because data for the full period are not available: Canton, Chattanooga, Dallas, Fort Wayne, Jacksonville, Knoxville, Long Beach, Miami, Oklahoma City, South Bend, Tampa, Tulsa, Utica, Wichita, Wilmington.

† Data for Fort Worth lacking.

‡ The rate for ninety-three cities in 1935 was 1.03 (total population 37,437,812, typhoid deaths 385), whereas in 1930 it was 1.64, and in 1933 and 1934 it was 1.24 and 1.25, respectively. The 1931-1935 average for the ninety-three cities is 1.31.

§ Rate for ninety-three cities in 1936 was 0.96 (total population 38,249,094, typhoid deaths 371).

LOWEST RECORD REACHED

For the seventy-eight cities for which complete data are available since 1910, there occurred 342 deaths from typhoid in 1936, which is the lowest of record (348 in 1935). The rate for this group of cities is for the second consecutive year less than 1.0. The rate for the ninety-three cities studied in 1936 is also slightly

TABLE 12.—*Total Typhoid Death Rate per Hundred Thousand of Population for Ninety-Three Cities According to Geographic Divisions*

	Population	Typhoid Deaths		Typhoid Death Rates					
							1931-1935	1926-1930	1925
		1936	1935	1936	1935	1934			
New England	2,630,017	11	13	0.42	0.49	0.53	0.70	1.31	2.48
Middle Atlantic	13,291,916	74	72	0.56	0.55	0.63	0.80	1.40	2.97
South Atlantic	2,585,257	40	61	1.55	2.58	2.11	2.70	4.50	7.01*
East North Central	9,705,898	70	58	0.72	0.60	0.91	0.75	1.29†	2.32†
East South Central	1,283,423	43	49	3.35	3.94	4.91	4.81	8.31	13.00
West North Central	2,775,847	22	23	0.79	0.85	1.48	1.24	1.83	3.43
West South Central	1,979,575	79	74	3.99	3.82	5.43	5.36	7.32‡	13.08§
Mountain and Pacific	3,997,161	32	35	0.80	0.88	0.75	0.88	1.80	2.33

* Lacks data for Jacksonville and Miami.

† Data for South Bend for 1925-1929 are not available.

‡ Lacks data for Oklahoma City in 1926.

§ Lacks data for Oklahoma City.

below 1.0 (0.96). This statistical study shows a downward trend in the death rate from typhoid in the large cities of the United States. As a cause of death this disease is of little consequence in many parts of the country. It is believed that in many urban areas, especially in the South, the prevalence of typhoid in surrounding rural areas materially handicaps the large cities in attaining more promptly a lower death rate from typhoid.

Council on Foods

THE COUNCIL ON FOODS HAS AUTHORZIED PUBLICATION OF THE FOLLOWING REPORT. FRANKLIN C. BING, Secretary.

THE NUTRITIONAL SIGNIFICANCE OF THE CURD TENSION OF MILK

II. The Relation of Curd Tension to the Digestibility of Milk

The early experiments of Brennemann[1] provided a vivid demonstration of the different curd qualities of raw and treated milks. Since that time curd tension has become generally recognized as an important factor in the digestibility of milk in the stomach. It has been thought that the formation of a soft, friable casein clot is advantageous because the digestive juices, which are supposed to act only on the surface of casein particles, could more readily and quickly attack porous or finely divided material. A recent report of the Council[2] summarized the large number of methods of modifying the curd texture of milk. The present report aims to evaluate the nutritional significance of soft curd milks, particularly in the feeding of infants, in the light of available experimental and clinical evidence.

EXPERIMENTAL EVIDENCE

Rate of Digestion in Vitro.—Efforts to relate curd tension to the rate of peptic digestion in vitro have shown striking differences in favor of soft curds. Doan and Welch,[3] for example, used untreated cow's milk and found that the milk which produced softer curds was more readily digested under laboratory conditions, especially if the digestion mixture was agitated. They studied also the effects of varying the p_H between 2 and 6 and found that increased acidity caused a greater acceleration of digestion in soft curd milk than in milk with higher curd tension. They observed that the digestion of hard curd milk (as measured by the increase in soluble nitrogen) progressed at a constant rate but that the digestion of soft curd milk was rapid at first and slower in the later stages. The slowing-up process was attributed in large measure to a reduction by digestion itself of the surface area remaining to be acted on by the digestive enzymes. From these clear-cut experiments it may be concluded that, other things being equal, the ability of milk to form a fine friable coagulum is a decided advantage in hastening the gastric digestion of casein. But of course artificial digestion experiments may not be a true representation of what takes place in the living organism. A review of the available biologic evidence suggests, indeed, that curd tension is important in the rate of digestion of casein but that other factors must also be considered.

Emptying Time of Stomach.—A number of investigators have studied the problem of soft curd milk by observing the emptying time of the stomach after the ingestion of different types of milk. Doan and Welch[3] performed regurgitation experiments on three normal adults and concluded that natural soft curd milk leaves less residue in the stomach after a given interval than does milk having a high curd tension. They attributed the more rapid emptying to the lower casein and fat contents of the milk, as well as to the softer curd. Espe and Dye[4] made use of dogs with Pavlov pouches and, assuming that the duration of secretion from the pouch after a milk meal was an index of the stay of the milk in the stomach, they likewise found a more rapid emptying time after soft curd milk had been ingested. Their conclusion that the effect is due to curd character may be open to criticism in the light of the observation of Hess, Koch and Sennewald[5] that adult dogs normally fail to coagulate milk completely. Observations on calves and rats killed at definite intervals after the ingestion of milk, however, have indicated that natural soft curd milk travels more rapidly through the alimentary tract.[6] In Brennemann's[1a] experiments boiled milk was found only in scant amounts in the human stomach after three hours, while raw milk was recovered in similar amounts after five hours.

In the light of the foregoing results it is difficult to interpret the observations of Ogilvie and Peden,[7] who found no differences between raw and boiled milk in the rate of emptying of the stomach of infants as determined by the stomach tube or in the amount of soluble nitrogen of the gastric contents. Their conclusions as to the rate of emptying are open to the criticism that the stomach tube is too small to withdraw large curds, which may be present. Studies in which barium sulfate and the fluoroscope were used for observing the rate of digestion of milk in from one to four adults indicated that evaporated milk and milk modified by the addition of citrate, alkali or barley water did not leave the stomach significantly quicker than ordinary milk.[8]

Schlutz and Fetter[9] used the balloon method to follow gastric motility after milk meals in four children and concluded that acid milks leave the stomach earlier than either evaporated or untreated milks. The rate of digestion of acid milk mixtures must be considered not only from the standpoint of curd tension but also from the standpoint of reduced buffer capacity. Buffer substances, which in milk are represented chiefly by protein and phosphates, take up added acid and thus resist changes in p_H. In order to effect a given small change in p_H, approximately three times as much acid must be added to cow's milk as to breast milk. Marriott and Davidson[10] determined the p_H of the gastric contents at the height of digestion and found that a greater acidity is attained after the ingestion of human milk than of cow's milk. Marriott[11] suggested the addition of acid to compensate for the larger amounts of hydrochloric acid held by cow's milk and to bring the gastric contents to the approximate p_H attained after the ingestion of human milk. Acid milk mixtures, therefore, might be expected to be digested more rapidly not only because of the lower curd tension but also because the gastric contents of the infant are more quickly brought into the range of acidity where the proteolytic enzymes of the gastric juice may act. Other observations on this subject will be discussed under the heading of clinical observations.

The determinations of soluble nitrogen by Schlutz and Fetter[9] suggested that acid milks are more quickly digested than mixtures made from powdered milk or untreated milk. Hess, Koch and Sennewald[5] believe that acid milks show a more rapid digestibility only in the early stages of digestion. These investigators determined free and total acidity and p_H of the gastric contents at half hour intervals for two hours following the ingestion of modified milks by puppies. The p_H of the gastric contents after one-half hour was found to depend largely on the acidity of the meal. After two hours the p_H was the same, regardless of the acidity of the milk that was ingested.

CLINICAL OBSERVATIONS

The evidence on the importance of low curd tension in hastening the emptying time of the stomach is conflicting, but the general consensus is that soft curd milk is more rapidly digested in the stomach. The evidence from clinical studies of the value of soft curd milk is likewise conflicting. Superior qualities for natural soft curd milk as a routine and special food for infants have been claimed by Hill[12] and denied by Elias[13] and

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2. The Nutritional Significance of the Curd Tension of Milk: I. The Production and Properties of "Soft Curd" Milks, J. A. M. A. **108**: 2040 (June 12) 1937.
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7. Ogilvie, Jesse W., and Peden, Olive D.: Gastric Digestion of Raw and Boiled Milk in Infants, Lancet **2**: 76 (July 14) 1934.
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9. Schlutz, F. W., and Fetter, Dorothy: Effect of Milk and Modified Milk on Gastric Contractions, Am. J. Dis. Child. **45**: 480 (March) 1933.
10. Marriott, W. McK., and Davidson, L. T.: The Acidity of the Gastric Contents of Infants, Am. J. Dis. Child. **26**: 542 (Dec.) 1923.
11. Marriott, W. McK.: The Artificial Feeding of Athreptic Infants, J. A. M. A. **73**: 1173 (Oct. 18) 1919.
12. Hill, R. L.: The Physical Curd Character of Milk and Its Relationship to the Digestibility and Food Value of Milk for Infants, Bull. 207, Utah Agr. Exper. Sta., 1928; Soft-Curd Milk: Nature's Food for Infants, Arch. Pediat. **48**: 417 (July) 1931.
13. Elias, H. L.: Soft Curd Milk, Am. J. Dis. Child. **44**: 296 (Aug.) 1932.

by Morris and Richardson.[14] Cow's milk modified by the base exchange method, which is therefore lower in calcium, has been reported by Rogers, Pavey and Williams[15] as suitable for the complemental feeding of infants. Evaporated,[16] sweetened condensed[17] and powdered milks[18]—all of which usually form soft, flocculent curds—have been used with clinical success in the feeding of normal infants. The acid milks have enjoyed considerable popularity, particularly during the last decade. The agents employed have included lactic acid[19] and sauerkraut juice,[20] hydrochloric acid,[21] citric acid[22] and citrus fruit juices[23] and vinegar.[24] Milks so modified have been reported to be suitable for the feeding of many infants, and valuable in the feeding of babies born prematurely and those with digestive disorders. Although acid milks had long been used empirically and the high buffer value of cow's milk was reported in the last century, it has been the studies of Marriott which in recent years have emphasized the desirability of adding acid to cow's milk. Brennemann,[16] who as a result of his earlier experiments interpreted the value of acid milks in terms of curd texture, undertook a crucial clinical experiment to evaluate the rôle of the acid. He and his associates were unable to detect any difference between two groups of fifty infants fed diets identical except for lactic acid. Evaporated milk was used for both groups. Brennemann was forced to the conclusion that curd texture, and not acidity, is of prime importance and that the value of acid milks lies in the modification of the curd. This conclusion has been amply supported by the work of Lynch[18] and of Jeans and Stearns.[25] Lynch observed identical rates of growth over a period of six months in two groups of infants fed powdered milk preparations with or without added citric acid. He found that less acid was needed for dried milk than for fresh milk and he expressed doubt as to the need for any acid at all in preparations made from powdered milk. In the experiments of Jeans and Stearns, acid milks prepared with lactic and citric acids, milk coagulated with a rennin-pepsin preparation, and evaporated milk proved equally effective in promoting good growth and in retentions of nitrogen, calcium and phosphorus.

As judged by growth, general condition,[26] and retention[27] of nitrogen, calcium and phosphorus it may be concluded that, in general, milks which form soft curds are well tolerated and utilized by infants and children.

SUMMARY

There is evidence that a variety of milk preparations which yield soft curds are well tolerated and well utilized by infants, children and older persons. In general, milk that has a low curd tension as determined by appropriate laboratory methods leaves the stomach more quickly than milk that does not have this property. Such digestion as takes place in the stomach is more quickly accomplished when the curd is soft. The evidence is meager, however, that any soft curd milks are "better digested" or more completely digested than ordinary boiled milk.

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION AND WILL BE LISTED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED.

FRANKLIN C. BING, Secretary.

STOKELY'S STRAINED BEEF BROTH

Manufacturer.—Stokely Brothers & Company, Indianapolis.

Description.—Canned, strained beef broth, slightly seasoned with salt.

Manufacture.—Fresh selected government inspected beef is cooked in a definite amount of water for six hours at 100 C. The beef is removed and the broth is strained, heated to 100 C., slightly seasoned with salt and filled into enamel-lined cans, which are sealed and processed for sixty minutes at 116 C.

Analysis (submitted by manufacturer).—Moisture 98.2%, total solids 1.8%, ash 1.1%, sodium chloride (NaCl) 0.8%, fat (ether extract) negligible, protein (N × 6.25) 0.8%, crude fiber none, reducing sugar as dextrose 0.1%, sucrose 0.1%, carbohydrates other than crude fiber (by difference) none, p_H 6.19, alkalinity of ash, cc. normal acid/Gm. 2.25.

Calories.—0.03 per gram; 0.9 per ounce.

Claims of Manufacturer.—Specially prepared strained beef broth for infant and for invalid feeding.

PILLSBURY'S BRAND FARINA

Manufacturer.—Pillsbury Flour Mills Company, Minneapolis.

Description.—Granular wheat endosperm or farina, practically free of germ and bran.

Manufacture.—Wheat is cleaned, washed, scoured and crushed and the bran and germ are separated from the flour middlings (endosperm) by the usual milling methods. Endosperm graded to uniform granulation is heated to destroy any insect infestation and packed in cartons.

Analysis (submitted by manufacturer).—Moisture 8.7%; ash 0.4%, fat (ether extraction method) 0.8%, protein (N × 5.7) 10.5%, reducing sugars as dextrose 0.2%, sucrose 1.3%, crude fiber 0.4%, carbohydrates other than crude fiber (by difference) 79.2%.

Calories.—3.7 per gram; 105 per ounce.

MORRIS SUPREME BRAND EVAPORATED MILK

Distributor.—Morris & Company, Division of Armour & Company, Chicago.

Packer.—Armour & Company, Chicago.

Description.—Canned, unsweetened, sterilized, evaporated milk, the same as Armour's Brand Evaporated Milk (THE JOURNAL, June 16, 1934, p. 2025).

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THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JUNE 19, 1937

THE ATLANTIC CITY SESSION

After all the superlatives are exhausted, the Atlantic City session arises to demand additional ones. Never in the history of medicine has there been such an assemblage of physicians, and never before such a wealth of material for their interest and instruction. Some 9,764 doctors registered their attendance in Atlantic City, 1,295 more than registered at the great session of 1935, the high mark up to the present. Moreover, the session in Atlantic City in 1935 was graced by the presence of 303 visitors from Canada who did not contribute to the mark of the present occasion. Every hotel on the boardwalk was filled to capacity and most of the visitors remained throughout the entire week.

In the House of Delegates, affairs of science and of government commanded the attention to such an extent that several extra sessions of the representative body were necessary to complete the tasks before it. Every physician in the United States should read the minutes of this meeting in order that he may personally be more definitely aware of the serious matters which concerned the delegates. The significant features involved resolutions leading toward a change in the nature of the practice of medicine, a decision by the House of Delegates to cooperate with the government in working out plans for the care of the indigent sick on direct request from the government, and a personal visit to the House of Delegates from Senator James Hamilton Lewis of Illinois, bringing an authorized message from the President.

The Committee on Contraception presented a simple, dignified report of its deliberations, which was unanimously adopted by the House of Delegates. This places on the various councils the responsibility for the examination of products used in contraception. It recognizes also the necessity for teaching the scientific aspects of both fertility and sterility. It recommends that doctors inform themselves concerning their legal rights and responsibilities in relationship to the prevention of conception, and it suggests that all such practice be in regularly licensed clinics under medical control.

Two definitely new procedures were also adopted by the House of Delegates and are mentioned here since they will definitely affect the work of the Association. A resolution was passed recommending the development of a distinguished service medal with citation to be presented each year at the time of the annual session to a physician who has rendered such service for the advancement of the art and science of medicine. The House of Delegates also adopted a resolution providing for the selection of a place of meeting three years beyond the time of the selection. There are many reasons for this change. Most significant is the fact that the meetings of the Association have grown so large that there are but few cities in the United States which can accommodate them satisfactorily. These are cities which contain large auditoriums capable of housing suitably the technical and scientific exhibits and also of providing acceptable halls for the meeting places of the sections. Since the number of such cities is limited and since the demand on them is great, it is necessary to make early choice in order to secure a time that will be satisfactory to the great numbers of physicians who now attend the annual session.

The reports of the officers and trustees of the Association, as well as those of the several councils and bureaus, were highly commended by the House of Delegates. New resolutions recommended cooperation in securing drivers' licenses in various states so as to aid in the prevention of fatalities from motor accidents; encouragement of investigation of teaching of osteopathy by an unbiased, nonpartisan source; recommendation to the Social Security Board that examinations for blindness be carried out only by doctors of medicine, competent in diagnosis and treatment of diseases of the eye; encouragement in the use of motion pictures in public and in medical education and for reviews and censorship of films used for advertising promotion; recommendation to the Council on Medical Education and Hospitals for more extended inspection of hospitals, and also resolutions on many other subjects, which will become apparent in the minutes of the session.

The General Scientific Meetings commanded tremendous audiences, and the motion picture clinic on syphilis was seen and heard by at least 7,500 visitors. More than 300 papers were read in the scientific sessions. The symposiums on neuropsychiatry, papers on the use of sulfanilamide, and meetings of many of the sections attracted capacity audiences.

The entertainment proffered through the Woman's Auxiliary and through the Local Committee on Arrangements was exceptional. The dinner to the House of Delegates presented a galaxy of famous figures in the field of medicine, and excellent entertainment was interspersed among their addresses. The

Opening General Meeting attracted an audience of between six and seven thousand. The addresses by Drs. Heyd and Upham were significant. The singing by the Madrigal Singers from Philadelphia elicited tremendous applause. So numerous were the visitors to the President's reception that hours were required for the passing of those who wished to greet the officers personally in the line of reception.

A veritable deluge of representatives of the press and of the various illustrated magazines descended on Atlantic City several days before the session and worked busily throughout. All the New York and Philadelphia newspapers, as well as the Detroit *Free Press,* the Washington *Star,* the Chicago *Tribune* and many others sent individual correspondents. Four men represented the Associated Press and there were others from all the important press services, including the five reporters who shared the Pulitzer prize in journalism this year. *Time, News Week* and *Life* were especially represented.

The Scientific Exhibit has come to represent what is probably the most noteworthy of the many extraordinary features of the annual session of the American Medical Association. Innumerable physicians who come to the meeting spend their entire time during the week visiting these exhibits. The collections in this year's session were beyond any displays ever made anywhere before. In scientific value, appearance, attendance, quantity, arrangement and in every other manner they reached the heights. So great was the attendance at the exhibits that it was again necessary that they be held open until 4 o'clock on Friday afternoon. All that has been said of the Scientific Exhibit applies equally to the Technical Exposition. Manufacturers have learned more and more the importance of making the exposition educational. So vast a number of physicians were constantly in and out of the attractive booths that the attendants at the exhibits found themselves well nigh physically and mentally exhausted before the session was completed. Few physicians realize how many thousands of persons are involved in employment in these sessions.

It is impossible to thank sufficiently the Local Committee on Arrangements. Every physician was promptly supplied with suitable quarters. The facilities for every purpose more than met the needs of the occasion. Sunshine prevailed, tempered by cooling winds. An unusual touch was a final word of farewell and congratulations announced over the loud speakers in railroad stations to various notables as they departed from the convention city. Some may have thought that the tremendous attendance in 1935 was due to the unusual character of the occasion and the visiting of our Canadian colleagues. No doubt, that played a large part. However, the vast assemblage of this year must be largely credited to the appeal of Atlantic City as a suitable place for such a scientific session.

THE TRANSPORT OF CARBON DIOXIDE BY THE BLOOD

The mode of transport of carbon dioxide by the blood, closely linked with the acid-base balance, has been much studied during the past two decades, especially in America, Great Britain and Denmark. Noteworthy discoveries have made this one of the most fascinating chapters in modern physiology. Oxygen, a neutral gas, and carbon dioxide, which forms carbonic acid when dissolved in water, are exchanged for each other in the lungs and in the tissues; nevertheless the organism maintains the degree of alkalinity of the plasma at an almost constant level. L. J. Henderson [1] made the brilliant deduction, later abundantly confirmed, that hemoglobin when combined with oxygen is a stronger acid than when in the reduced state. This variability in the acid strength of hemoglobin, he concluded, is the chief factor in preventing the plasma from becoming more alkaline in the lungs and acid in the tissues. In the latter case, since production of carbon dioxide under ordinary conditions is proportional to oxygen consumption, the mechanism is peculiarly adapted to meeting the conditions that arise locally in various tissues under varying conditions of activity.

Attention was then directed toward the manner in which the effects of reactions taking place in the red blood cells are transmitted to the plasma. Van Slyke and his co-workers [2] found that a great part of the carbon dioxide entering the blood is at once taken up by the red cells and converted to bicarbonate, a considerable part of which is then exchanged for chloride from the plasma, the acid-base balance in the plasma being thus maintained. The elucidation of these mechanisms, with the first comprehensive description, both qualitative and quantitative, of the equilibriums between red cells and plasma constituted a major step forward.

Henriques,[3] turning his attention to the dynamics of these processes, found that the time spent by the blood in the capillaries of the tissues and lungs—about one second as an average—is too short for the unaided attainment of such equilibriums as had been studied. This is especially true of the formation of carbonic acid from the combination of carbon dioxide with water and of the reverse process, the dehydration of carbonic acid to gaseous carbon dioxide, the latter occurring principally in the lungs. This led to the discovery of a catalyst, first purified by Meldrum and Roughton [4] and named by them "carbonic anhydrase." This catalyst, which is present in the red cells but not in the plasma,

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3. Henriques, O. M.: Die Bindungsweise des Kohlendioxyds im Blut: I. Ueber die Geschwindigkeiten der Anhydrisierung bzw. der Hydratisierung der Kohlensäurekomponenten im Blut, Biochem. Ztschr. **200:** 1, 1928; Ueber Carbhaemoglobin, Ergebn. d. Physiol. **28:** 625, 1929.
4. Meldrum, N. U., and Roughton, F. J. W.: Carbonic Anhydrase: Its Preparation and Properties, J. Physiol. **80:** 113 (Dec. 5) 1933.

has the property of enormously accelerating the reaction between carbon dioxide and water in both directions and is of great physiologic significance in the dynamics of carbon dioxide transport.

A further consequence of the pioneer work of Henriques was the demonstration of a direct combination between hemoglobin and carbon dioxide in the form of a "carbamino" compound, extensively investigated by Roughton and his co-workers [5] and others. Thus to the three previously known forms of carbon dioxide in the blood (dissolved carbon dioxide, carbonic acid and bicarbonate) is added a fourth, called "hemoglobin carbamate" by Stadie and O'Brien,[6] again of great physiologic significance. As Ferguson [7] shows, this discovery does not invalidate the importance of the variability in the acid strength of hemoglobin, as discovered by Henderson, but rather extends and clarifies its significance.

Both the newer and the older discoveries have been consolidated by Stadie and O'Brien,[6] who have been able by the application of the fundamental law of mass action to reduce at least the chief elements in the behavior of carbon dioxide in the blood to quantitative terms and to evaluate the part played by each of the processes concerned in an extraordinarily efficient mechanism for transporting this substance from the tissues to the lungs with minimal changes in the degree of alkalinity of the blood. It emerges more clearly than ever before that hemoglobin, by virtue of its peculiar properties, accounts directly and indirectly for the transport of approximately 90 per cent of the carbon dioxide carried from the tissues to the lungs. That the mechanisms involved in the transport of oxygen and of carbon dioxide, although differing radically in character, are closely interrelated has been recognized since the demonstration [8] of the influence of oxygen and carbon dioxide on the behavior of each other in the blood. From the newer knowledge there is a clearer definition of the manner in which oxygen in the lungs helps to "pump" carbon dioxide out of the blood and in which carbon dioxide in the tissues helps to "pump" oxygen from the blood, both processes being vital to the rapid changes taking place during the short stay of the blood in the capillaries.

Many further details remain to be added. Nevertheless the successive discovery of the variable acid strength of hemoglobin, of the equilibriums between red cells and plasma, of carbonic anhydrase and of hemoglobin carbamate, and the elucidation of their physiologic significance are accomplishments that constitute a triumph for modern physiology.

5. Roughton, F. J. W.: Carbon Dioxide Transport by the Blood, Physiol. Rev. **15**: 241 (April) 1935.

6. Stadie, W. C., and O'Brien, Helen: The Carbamate Equilibrium: II. The Equilibrium of Oxyhemoglobin and Reduced Hemoglobin, J. Biol. Chem. **117**: 439 (Feb.) 1937.

7. Ferguson, J. K. W.: Carbamino Compounds of CO_2 with Human Hemoglobin and Their Rôle in the Transport of CO_2, J. Physiol. **88**: 40 (Oct.) 1936.

8. Bohr, C.; Hasselbalch, K., and Krogh, A.: Ueber einen in biologischer Beziehungwichtigen Einfluss den die Kohlensäurespannung des Blutes auf dessen Sauerstoffbindung übt, Skand. arch. f. Physiol. **16**: 402, 1907. Christiansen, J.; Douglas, C. G., and Haldane, J. S.: The Absorption and Dissociation of Carbon Dioxide by Human Blood, J. Physiol. **48**: 244, 1914.

BREAST MILK AND LYSOZYME

In large institutions there are frequently shortages in the supply of breast milk owing to variations in supply and demand. At the New York Foundling Hospital, Scheuer and Duncan [1] have attempted to solve this problem by pasteurizing breast milk in ordinary nursing bottles at 175 F. for thirty minutes on three successive days. The bottles, stoppered with sterile corks, are sealed and stored in a refrigerator at from 38 to 52 F. The milk has been found to remain sterile for as long as two years. These investigators consider it a satisfactory substitute for fresh breast milk and have found also that the fecal flora of infants thus fed is approximately that of infants given the fresh breast milk.

Other apparently important factors have been discussed by other investigators. Thus in 1931 Rosenthal and Lieberman [2] found a lytic principle in the stools of nurslings which was identified as lysozyme, a substance previously discovered in various human and animal tissues by Fleming,[3] which had "properties akin to ferments." It was absent from cow's milk, the common milk formulas, and the stools of artificially fed infants but was found in the stools of breast-fed babies after the fourth day. Its characteristic property is the dissolution of live bacteria in culture; it inhibits the growth of Bacillus coli at 37 C. and lyses it at 56 C. It was found relatively thermolabile and tended to stabilize the gram-positive intestinal flora of nurslings.

Recently, Blatt and Kessler [4] made bacterial counts on plate cultures of expressed human milk and determined what they called the "lytic index" of the various samples. The milk was collected by aseptic technic and was refrigerated at from 9 to 12 C. The samples collected by manual expression of the breasts had a lower initial bacterial count than those collected by means of a pump, whether hand or electrically operated, and the lytic index was also higher. This difference is apparently due to the large area of breast tissue bathed by the expressed milk when the electric pump is used, the milk being thus exposed to contamination. The low initial count could be maintained for as long as seventy-two hours when the milk was kept at a low temperature. Staphylococcus albus was the predominating organism. Boiling reduced the lytic action greatly, and repeated boiling caused complete inactivation. Raw breast milk was fed to premature infants on the theory that implantation of the gram-positive bacteria normally present in the stools of breast-fed infants might be accomplished. No diarrhea developed in the children thus fed. It is thus clear that all the factors relating to breast milk are not even yet wholly understood.

1. Scheuer, Lewis A., and Duncan, Jessie E.: A Method of Preserving Breast Milk, Am. J. Dis. Child. **51**: 249 (Feb.) 1936.

2. Rosenthal, Lazar, and Lieberman, Hyman: J. Infect. Dis. **48**: 226 (Feb.) 1931.

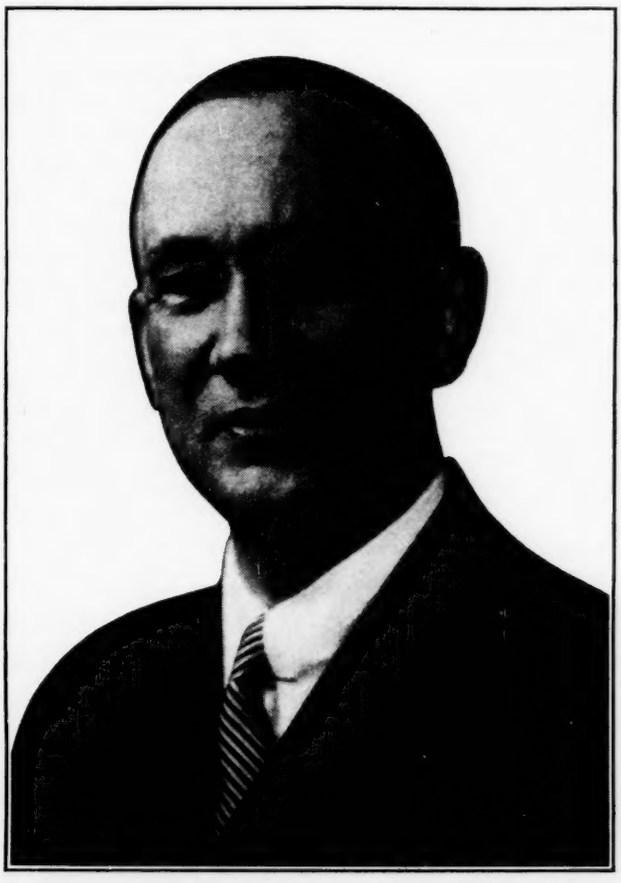
3. Fleming, A.: Proc. Roy. Soc. London, s. B **93**: 306, 1922.

4. Blatt, Maurice L., and Kessler, Helen: Human Milk, Am. J. Dis. Child. **53**: 768 (March) 1937.

Current Comment

IRVIN ABELL—PRESIDENT-ELECT

In an election in which every candidate was unopposed, indicating a remarkable unanimity of action by the representatives of organized medicine, Dr. Irvin Abell of Louisville, Ky., was made President-Elect of the American Medical Association in the annual session at Atlantic City. The popularity of the candidate is not surprising in view of his long record of service to the medical profession. In the American Medical Association he served as a delegate from Kentucky in the House of Delegates at the annual sessions of 1922, 1924-1928 and 1930-1935. He was a member and at various times has served as chairman of many important reference committees in the House of Delegates. Since 1931 he has been a member of the Council on Scientific Assembly and since 1935 its chairman. Dr. Abell was born in Lebanon, Ky., Sept. 13, 1876. He received his A.M. degree from St. Mary's College, St. Mary, Ky., in 1894 and his M.D. from the Louisville Medical College in 1897. He continued his studies at the University of Berlin in 1898. Since 1900 he has practiced in Louisville, Ky., becoming professor of surgery in the University of Louisville in 1904 and serving continuously in that position. He has been visiting surgeon of the Louisville Public Hospital and the St. Joseph Infirmary, and consulting surgeon for the Children's Free Hospital and the Kosair Hospital for Crippled Children. Among other positions indicating his executive ability, he is a director of the Commonwealth Life Insurance Company, the Fidelity and Columbia Trust Company and the Louisville Foundation, and also a trustee of the University of Louisville. Dr. Abell holds memberships in the American College of Surgeons, the American Surgical Association, the Southern Medical Association, the Southern Surgical Association, the American Urological Association and the American Gastro-Enterological Society. He served recently as chairman of the McDowell Committee, which purchased the McDowell home in Danville, Ky., and aided in its restoration. During the World War he was a Lieutenant Colonel, commanding Base Hospital No. 59, then Colonel in the Medical Officers Reserve Corps and commanding officer of the United States Army Reserve Corps Hospital No. 59. Noted for his geniality and his lovable character, he should have the confidence and the cooperation of all the members of the great organization in which he is now given leadership.



IRVIN ABELL, M.D.
PRESIDENT-ELECT OF THE AMERICAN MEDICAL ASSOCIATION

INTRA-UTERINE FETAL RESPIRATION

Is intra-uterine respiration of the amniotic fluid a normal function in the full term mammalian fetus? Does it serve a useful purpose in the dilation of the pulmonary alveoli and bronchial passages? Some unconventional conclusions by Snyder and Rosenfeld[1] of the department of pharmacology at Johns Hopkins University School of Medicine were based on laparotomy studies on seven full term pregnant rabbits, the operations being performed beneath the surface of a bath of Ringer's solution at 37 C. In these seven operations they found twenty-five full term fetuses, fourteen of which showed active respiratory movements at the time of laparotomy. To demonstrate an actual tidal flow of amniotic fluid in the respiratory tract of these fetuses, 1 cc. of 50 per cent india ink was injected into each amniotic sac. From one to sixty minutes after injection the trachea of each fetus was clamped and the lungs were examined and fixed in solution of formaldehyde before removal of the clamp. The fixed lungs were studied by histologic methods. In all fetuses showing demonstrable respiratory movements the lungs were blackened by the inspired india ink. The eleven apneic fetuses showed lungs macroscopically and microscopically free from carbon particles. Litter mates breathing at different rates showed a correlation between the rate of respiration and the depth of pulmonary blackening. In a fetus breathing at the rate of ninety-six per minute, for example, the lungs were much darker than those of a litter mate breathing at a rate of ten per minute. The authors conclude that "amniotic fluid normally occupies the alveoli of the fetal lung," that "spontaneous respiratory movements are responsible for a tidal flow in the respiratory tract," and that this "interuterine respiration is of functional significance in the development of a normal lung."

1. Snyder, F. F., and Rosenfeld, Morris: Proc. Soc. Exper. Biol. & Med. **36**: 45 (Feb.) 1937; J.A.M.A. **108**: 1946 (June 5) 1937.

PROCEEDINGS OF THE ATLANTIC CITY SESSION

MINUTES OF THE EIGHTY-EIGHTH ANNUAL SESSION OF THE AMERICAN MEDICAL ASSOCIATION, HELD AT ATLANTIC CITY, JUNE 7-11, 1937

HOUSE OF DELEGATES

First Meeting—Monday Morning, June 7

The House of Delegates convened in the Renaissance Room of the Ambassador Hotel and was called to order at 10:05 a. m. by the Speaker, Dr. N. B. Van Etten.

Preliminary Report of the Reference Committee on Credentials

A preliminary report of the Reference Committee on Credentials was submitted by the chairman, Dr. Benjamin F. Bailey, Nebraska, who reported that 102 delegates with proper credentials had registered but that the number would be greatly increased before the first session of the House adjourned. Dr. Bailey read a letter from the Section on Nervous and Mental Diseases submitting the name of Dr. Hans H. F. Reese as its delegate since the duly elected delegate and alternate from that section were unable to be in attendance. On motion of Dr. J. Gurney Taylor, Wisconsin, seconded by Dr. Arthur C. Morgan, Pennsylvania, and carried, Dr. Reese was seated.

Dr. Arthur J. Bedell, Section on Ophthalmology, moved that the report of the Reference Committee constitute the roll of the House. The motion was seconded by Dr. George W. Kosmak, New York, and carried.

Adoption of Minutes of Kansas City Session

It was moved by Dr. George W. Kosmak, New York, seconded by Dr. J. Newton Hunsberger, Pennsylvania, and carried, that the minutes of the Kansas City session be adopted as printed.

Message of Sympathy

The Secretary announced that his assistant in the House of Delegates, Miss Hattie A. Niehoff, had been called home because of the sudden death of her mother, and it was moved by Dr. Samuel J. Kopetzky, New York, seconded by Dr. George W. Kosmak, New York, and carried, that the House instruct its Speaker to send a telegram of sympathy to her.

Official Delegates and Invited Guests

The Secretary announced that the House of Delegates would be honored this year by the presence of official delegates and guests from foreign countries, who would be presented to the House at some later time during the session.

Executive Session—Monday Morning, June 7

On motion of Dr. Arthur J. Bedell, Section on Ophthalmology, seconded by Dr. J. Newton Hunsberger, Pennsylvania, and carried, the House went into Executive Session at 10:25 a. m., the membership to consist of duly accredited delegates, general officers, past and present, delegates from the American Bar Association and presidents and secretaries of constituent state medical associations.

The Sergeants-at-Arms polled the House, after which the House went into Executive Session.

At the request of the Speaker, the Secretary read telegrams received from Hon. J. Hamilton Lewis, U. S. Senator from Illinois, requesting the privilege of addressing a section of the Association.

It was moved by Dr. G. Henry Mundt, Illinois, seconded by Dr. A. T. McCormack, Kentucky, and carried, that the Secretary be instructed to inform Senator Lewis that he would be welcome to appear before the House of Delegates, the time best suited being at the beginning of the Executive Session on Tuesday afternoon, June 8.

The House rose from Executive Session on motion of Dr. C. E. Mongan, Massachusetts, seconded by Dr. J. D. Brook, Michigan, and carried.

Address of the Speaker, Dr. N. B. Van Etten

The Vice Speaker, Dr. H. H. Shoulders, Tennessee, presided while the Speaker, Dr. N. B. Van Etten, read his address, which was referred to the Reference Committee on Reports of Officers:

Members of the House of Delegates:

Many of you are so familiar with the figures that play their parts on this stage that you could not fail to recognize them in any other setting. The classic features of the distinguished Secretary must be indelibly engraved on your memory. Presidents and other officers have identified themselves in this spotlight and have been embarrassed by your scrutiny as they have labored for your approval. On the other hand, those you have honored with the courtesy of these vantage points have been looking into your faces and beyond your faces with the deepest interest in your foreground and your background. Each one of you has grown up through the fundamental culture of your homes, your schools, your social contacts, your own investigations, your appreciation of your opportunities, your realization of your responsibilities and your emotional reactions until what you are has made such an impression on those who know you that they have chosen you to represent them here.

From 1846 until this day your seats have been occupied by selected persons. You represent 100,000 physicians. Those who delegated you are the most highly educated groups of citizens of the Republic, and they selected you because of your inherent quality. They have delegated you to interpret their desires for the best interests of organized medicine. I do not believe that there is anywhere another assemblage of 170 men that is superior in intelligence. You are the most important officers of American medicine and you in turn have delegated authority to officers and trustees who are bound to execute your mandates.

The American Medical Association has been freely accused of being reactionary, static, slow, and unresponsive to social demands. Some of our own members are impatient to meet social problems quickly. If there is justice in these complaints you must regard them as valid criticisms of this legislative body because you have made the policies of the Association. Many of these criticisms are evolved in ignorance. Captious criticism is frequently the expression of those who seek to evade responsibility for their own incompetence. Shifting responsibility is a common pastime.

Early records of organized medicine in the era of Babylonian culture 4,000 years ago reveal organization of medical men to protect the public from quacks and charlatans and also for self preservation—and these ideals have prevailed through the centuries.

In our early American history when competitive life was less intense, physicians seem to have associated themselves mainly for deliberative purposes. In those early days the House of Delegates had simpler problems, mostly concerned with medical education and licensure. With the evolution of American society there has come a need for concerted labors and a demand that deliberation be translated into action. Pressure groups are pushing the medical profession into unfamiliar

channels that lead to organization for political progress and for defensive activity against outside control.

This House of Delegates has a legislative responsibility which is a serious one and must not be taken lightly. Article 5, Section 1, of the Constitution reads: "The legislative powers of the Association reside in the House of Delegates. The House of Delegates shall transact all business of the Association not otherwise specifically provided for in this Constitution and By-Laws, and shall elect the general officers."

You are the policy makers, you elect the general officers and the Trustees who are obligated to carry out your instructions, but these Trustees also have powers limited by the Constitution in Article 7, which reads: "The Board of Trustees shall have charge of the property and financial affairs of the Association and shall perform such duties as are prescribed by law governing directors of corporations." You have, however, laid on the Trustees, by your resolutions, many other duties which they must try to perform to the best of their abilities.

Sitting with the Trustees, as is my privilege, I have been greatly impressed by their meticulous fidelity to their obligations and also by the fact that very little careless legislation passes this House.

Although the complexion of the House of Delegates changes from year to year, there are fortunately a sufficient number of seasoned members to guarantee continuity of experience. The lessons of the past may wisely check ill-considered action without strangling vitality.

Thirty-six of the delegates elected to this House began their services fifteen or more years ago, twenty-one attended their first session twenty or more years ago, and eleven delegates began their activities in this department of organized medicine twenty-five or more years ago. The service of these delegates has not in every instance been continuous, but their presence at this session is evidence of the high esteem in which they are held in their home states. Their long and distinguished service has materially strengthened the respect in which the House of Delegates is held by American physicians. While all these delegates deserve commendation, it seems fitting that eleven of them should be placed on an honor roll today.

For the purpose of identifying them to the new members, I would like them to rise for a moment as their names are called.

Dr. Thomas S. Cullen, Maryland, attended his first session in 1902 and is now attending his thirtieth session; he is dean in point of attendance.

Dr. George P. Johnston, Wyoming, first came to the House in 1903 and is serving his thirteenth session.

Dr. Edward H. Cary, Texas, attended his first session in 1906. He has been seventeen times a delegate, attended four other sessions as a Trustee, one as President-Elect and one as President and is now starting his twenty-fourth session.

Dr. Arthur T. McCormack, Kentucky, attended his first session in 1908 and begins his twenty-fifth session today.

Dr. Edgar A. Hines, South Carolina, attended his first session in 1910 and enters on his twenty-eighth session this morning.

Dr. Roger I. Lee attended his first session in 1911 and is now attending his twelfth session.

Dr. Arthur C. Morgan, Pennsylvania, began his service in 1911 and is now attending his eleventh session.

Dr. Ben R. McClellan, Ohio, also began his service in 1911 and is now serving at his twenty-fourth session.

Dr. Grant C. Madill, New York, attended his first session in 1912 and enters his eighteenth session today.

Dr. William D. Johnson, New York, also came the first time in 1912 and begins his eighth session this morning.

Dr. Holman Taylor, Texas, also belongs to the class of 1912 and has regaled the House with wit and wisdom for twenty-two sessions.

There are five other men who deserve special medals with palms for consecutive, uninterrupted service for more than twenty years, exemplars of extraordinary appreciation of their value to organized medicine. I should like them to rise also. They are: Dr. J. H. J. Upham, Ohio, whose twenty-four sessions have not been interrupted; Dr. Charles J. Whalen, Illinois, whose twenty-three sessions have had no interruption; Dr. Rock Sleyster, Wisconsin, whose twenty-three sessions have had no interruption; Dr. J. D. Brook, Michigan, who is here for his twenty-second session, and Dr. Arthur J. Bedell, New York, who now enters his twenty-first session.

Having identified the veterans, I would like to introduce seventeen men who are here for the first time. Will they please rise as their names are called?

Arkansas	William H. Mock
California	Robert A. Peers
Delaware	Stanley Worden
Illinois	E. S. Hamilton
Kentucky	E. L. Henderson
Massachusetts	Walter A. Lane
Michigan	T. R. K. Gruber
New Jersey	Blase Cole
New York	James H. Borrell
New York	Thomas H. Cunningham
Vermont	A. B. Soule Jr.
Washington	Raymond L. Zech
Wisconsin	Gunnar Gundersen
Alaska	Noble Dick
Philippine Islands	Frederick W. Meyer
Puerto Rico	Ramón M. Suárez
United States Navy	Robert E. Stoops

To you gentlemen, the Speaker extends the right hand of fellowship and asks your active participation in all discussions. I trust that a Thomas Cullen and an Edward Cary and an Edgar Hines may be found among you and that you may be returned from your states to break all records.

May I add that all members of the House should remember that they have not discharged their full duty until they have followed their resolutions to the Reference Committees to which they have been committed and may I also remind you that all Reference Committee rooms are open to all of you.

It is desirable that Reference Committees meet at the earliest possible moment and that they make every effort to prepare their reports so that the business of the House may move as rapidly as is consistent with parliamentary procedure.

Since the Kansas City session last year thirty-four former delegates or officers have died. The dates following their names indicate their years of service:

H. L. Alkire, Topeka, Kan., 1908.
William H. Arthur, United States Army, 1915.
Elias Hudson Bartley, Brooklyn, 1909-1910.
Arthur G. Bennett, Buffalo, 1926.
William Joseph Birkofer, Gothenburg, Neb., 1910.
Daniel S. Dougherty, New York, 1927-1928; 1930-1932; 1935.
William Duffield, Los Angeles, 1932.
Duncan Eve Sr., Nashville, Tenn., 1903-1904 (first vice president, 1887).
Frank Y. Gilbert, Portland, Maine, 1914; 1917; 1919; 1927; 1930.
John F. Hagerty, Newark, N. J., 1926-1927; 1930-1934; 1935 Special Session; 1935-1936.
Rufus B. Hall, Cincinnati, 1908-1909; 1919.
S. W. Hammond, Rutland, Vt., 1905.
George A. Hare, Fresno, Calif., 1912-1915.
A. M. Hayden, Evansville, Ind., 1906; 1908.
J. Allison Hodges, Richmond, Va., 1923.
Thomas B. Holloway, Philadelphia, 1918.
Collins H. Johnston, Grand Rapids, Mich., 1908.
A. Haines Lippincott, Camden, N. J., 1935.
W. C. Lyle, Augusta, Ga., 1911; 1914; 1922.
J. Tate Mason, Seattle, Wash., 1928; 1930-1934; 1935 Special Session (President-Elect, 1935-1936; President, 1936).
William H. Mayer, Pittsburgh, 1920-1934; 1935 Special Session; 1935.
Henry P. Newman, San Diego, Calif., 1916-1918.
Edward S. Reynolds, Boston, 1921.
William L. Rich, Salt Lake City, 1923.
W. B. Scull, Philadelphia, 1911; 1920.
Sidney K. Simon, New Orleans, 1922.
Frank Smithies, Chicago, 1927-1930 (member of Council on Scientific Assembly, 1930-1935).
Willard Springer, Wilmington, Del., 1902; 1917.
Wells Teachnor Sr., Columbus, Ohio, 1924-1925; 1927-1934; 1935 Special Session; 1935-1936.
Randolph Winslow, Baltimore, 1905-1906; 1911; 1913; 1916-1923; 1927-1934; (member of Judicial Council, 1915-1922).
H. M. Workman, Tracy, Minn., 1905-1906.
John T. Axtell, Newton, Kan., 1913.
James N. Vander Veer, Albany, N. Y., 1926-1935.
George A. Leitner, Piermont, N. Y., 1925-1935; (for many years served as Sergeant-at-Arms).

Many of us have vivid memories of these, our friends. I am sure that we shall be motivated by their inspiration.

At the request of the Vice Speaker, the members of the House rose and stood for one minute in silent tribute to the memory of departed delegates.

On motion of Dr. Charles H. Goodrich, New York, seconded by Dr. Walter E. Vest, West Virginia, the House consented to the appointment of a Reference Committee on Executive Session.

Reference Committees

The Speaker presented the following names of members of Reference Committees:

SECTIONS AND SECTION WORK

J. E. Paullin, Chairman.....Section on Practice of Medicine
Arthur J. Bedell.....Section on Ophthalmology
Elbridge J. Best.....California
J. Allen Jackson.....Pennsylvania
Charles R. Scott.....Idaho

RULES AND ORDER OF BUSINESS

H. A. Luce, Chairman.....Michigan
Wyndham B. Blanton.....Virginia
J. P. DeWitt.....Ohio
Samuel J. Kopetzky.....New York
Raymond L. Zech.....Washington

MEDICAL EDUCATION

F. S. Crockett, Chairman.....Indiana
George Blumer.....Connecticut
J. T. Christison.....Minnesota
Charles A. Dukes.....California
Walter E. Vest.....West Virginia

LEGISLATION AND PUBLIC RELATIONS

Terry M. Townsend, Chairman.....New York
J. C. Flippin.....Virginia
Harold T. Low.....Colorado
Stanley H. Osborn.....
....Section on Preventive and Industrial Medicine and Public Health
J. Gurney Taylor.....Wisconsin

HYGIENE AND PUBLIC HEALTH

James Q. Graves, Chairman.....Louisiana
Lewis B. Bates.....Isthmian Canal Zone
W. F. Draper.....United States Public Health Service
Meredith Mallory.....Florida
G. Henry Mundt.....Illinois

AMENDMENTS TO CONSTITUTION AND BY-LAWS

J. N. Baker, Chairman.....Alabama
Charles H. Goodrich.....New York
George P. Johnston.....Wyoming
Virgil E. Simpson.....Kentucky
Thomas F. Thornton.....Iowa

REPORTS OF OFFICERS

Wingate M. Johnson, Chairman.....North Carolina
J. Newton Hunsberger.....Pennsylvania
R. L. Sensenich.....Indiana
Joseph F. Smith.....Wisconsin
Guy W. Wells.....Rhode Island

REPORTS OF BOARD OF TRUSTEES AND SECRETARY

Floyd S. Winslow, Chairman.....New York
Clyde L. Cummer.....Section on Dermatology and Syphilology
Arthur C. Morgan.....Pennsylvania
McLain Rogers.....Oklahoma
Joseph F. Siler.....United States Army

CREDENTIALS

B. F. Bailey, Chairman.....Nebraska
J. W. Burns.....Texas
Blase Cole.....New Jersey
William H. Myers.....Georgia
Deering G. Smith.....New Hampshire

MISCELLANEOUS BUSINESS

J. D. Brook, Chairman.....Michigan
Herbert L. Bryans.....Florida
Walt P. Conaway.....New Jersey
Charles S. Skaggs.....Illinois
C. W. Waggoner.....Ohio

EXECUTIVE SESSION

Thomas A. McGoldrick, Chairman.....New York
J. H. Cannon.....South Carolina
E. H. Cary.....Texas
E. F. Cody.....Massachusetts
John H. Fitzgibbon.....Oregon

COMMITTEE ON REAPPORTIONMENT

Walter F. Donaldson, Chairman.....Pennsylvania
H. B. Everett.....Tennessee
Charles J. Whalen.....Illinois
Olin West.....Secretary
Nathan B. Van Etten.....Speaker, House of Delegates

SERGEANTS AT ARMS

Holman Taylor.....Texas
Howard C. Frontz.....Pennsylvania

Committee to Propose Amendments to By-Laws Providing for Fitting Recognition to Fellows Rendering Distinguished Service in Science and Art of Medicine

H. H. Shoulders, Chairman.....Tennessee
John W. Amesse.....Colorado
J. D. Brook.....Michigan
J. F. Hassig.....Kansas
Grant C. Madill.....New York

Address of President Charles Gordon Heyd

The Speaker resumed the Chair and presented the President, Dr. Charles Gordon Heyd, New York, who delivered the following address, which was referred to the Reference Committee on Reports of Officers:

Mr. Speaker and Members of the House of Delegates:

A philosopher observing the passing pageant of social change might well exclaim "Cursed be the social lies that warp us from the living truth." He would listen to a melody of chaos, with embattled nitwits wishing to destroy the cultural and physical progress of the last fifty years by a futile attempt to remodel human nature and incidentally remake the entire field of medical practice to his heart's content.

It is opportune that we should survey the situation. At the outset I grant that there are certain areas in the United States where there is what may be termed inadequacy of medical service. There will remain such inadequacies of service until the enlightening benefit of education, until there is an increase in nutritional standards, until good roads and long continued health education have rendered it possible to bring the intellectual and cultural level of the people living in these areas to a social plane that makes modern medicine possible of application. Medicine today is doing its social duty in a continuous and unostentatious manner but with a constant increment of effectiveness in improving the health of all of our people. The mortality and morbidity statistics give the final answer as to the effectiveness of the medical service. In the last thirty-five years the crude mortality has diminished; better babies are being born, individuals are living longer and many diseases have almost completely disappeared or are being brought into a numerical condition of an irreducible minimum. As contrasted with this we have the violence from the fast tempo of American life, which has killed yearly more and more of our citizens until death by accident is fifth in the causes of death.

In the broad social sense, conditions of housing are improving, hours of labor are being reduced, the wages of the laborer are being increased and nourishment is becoming more adequate and more scientific. In brief, the personal and environmental conditions of life are improving everywhere in the United States.

The profession, under the give and take of free competition in medical practice, has produced insulin, liver therapy and vitamin nutrition, has developed orthopedic, cancer and restorative surgery, has made diagnosis precise by advances in x-rays and instrumentation, and has evolved effective therapy with x-rays and radium—in brief, has been so prolific in useful discoveries that medicine is to be rated well in advance of any of the physical sciences.

There are, however, on the medical horizon certain provocative questions. Organized medicine is not immune from critical study and must find the answer to certain impending changes in our medicosocial organization. The abstract question "Has an individual a claim on government for personal medical care?" should be answered. Governmental agencies control education, influence public opinion, have the major portion in the management of widespread health movements, and with legislative enactment control hours of labor, child labor and conditions under which labor works. It would be apparent that medical care is a problem not alien to the purpose of government, for the health of its citizens must be one of the paramount considerations of the state.

Society may be divided into four main groups. This division is based on their economic status: 1. The rich: The members of this class are quite capable of paying for medical services; they constitute great economic power but little, if any, political power. 2. The salaried group, as distinguished from wage earners: These persons are able to buy medical services under the ordinary conditions of a proper economic system; they are not politically powerful and as a rule are not organized politically. 3. The wage earners: This group constitutes approximately 27,000,000 individuals and earned $34,485,000,000 in 1929. They represent the acme of political power; they may and usually are organized by astute politicians for the furtherance of machine politics and class privilege. Under normal circumstances they can pay for ordinary sickness, but their financial position is in jeopardy in the presence of a sudden, emergent, catastrophic illness. 4. The indigents: An indetermined number

who by reason of poverty, maladjustment and diverse reasons, cannot pay for medical services at any time under any economic system.

Four factors contribute to the medicosocial disabilities of the present day: (1) the utilization of power in the production and maintenance of machines, (2) the crowding of the world by the biologic phenomena of accelerated production, (3) the immense accumulation of scientific knowledge, and (4) the tremendous upsurgence and steady rise in average education.

It is not compulsory health insurance or state medicine that will destroy free and competitive medical practice; it is an extension of institutional medicine for which the state will provide the funds. The hospitals under the full time, paid physician are in spirit and many times actually practicing medicine. These same hospitals are confronted with a diminishing income. In 1929 the voluntary hospitals received $130,000,000 from private benefactors and in 1935-1936 received $24,000,000, a decrease of 80.9 per cent. The hospital system faces no new givers of large funds, and hospitals have had the income from their investments reduced. It is not improbable that the state will enter into this picture in order to maintain the existing hospitals, clinics and health centers already set up. This will certainly entail political control of the greatest source of medical practice and it requires but little imagination to anticipate that the second step in this program will be the control of the medical schools.

Many prophets in high office have been preaching the pernicious doctrine that the high cost of medical care is due to the doctors. This requires some analysis. The statistics of outpatient departments show that more and more people are availing themselves of free dispensary medical service. The percentage of increase in free dispensary service is describing a curve with a greater acceleration than the increased rate of population. Obviously, if this is carried to its final conclusion everybody would eventually be free dispensary patients. More and more physicians will of necessity become salaried physicians, which by and of itself is neither good nor bad. The fact that a doctor has a salaried position lessens his overhead and in many cases takes away from and keeps away from him his greatest source of worry; namely, the overhead in slack times.

It is not good public policy to ask the doctor to contribute largely of his time, strength and health in rendering free services in the hospital or in the community, when every other person who comes in contact with the sick is paid adequately for the services rendered.

It is apparent that solidarity of the medical profession is under constant sabotage by groups on the fringe of the profession. Furthermore, we have within the profession certain pressure and compulsion groups that are endeavoring by indirection to set up alien forms of medical service. This fractionalization of medical organization, or, better, fragmentation, has done much to implement the enemies of the profession. It would seem wise that we reexamine and reappraise our medical policies. There is literally a tower of Babel apparently speaking for the profession. It has often seemed to me that Elbert Hubbard's beautiful brochure "Essays on Silence" would be a splendid gift to some of our professional planners. You will remember that this particular brochure has seventy-five pages without a word on them. The House of Delegates of the American Medical Association is rightly the voice of the organized medical profession and should speak in unequivocal terms what it considers the best form of medical practice for the citizen of the United States. Your Trustees have been vigilant in anticipating some of the various attacks made on the medical profession. They have fulfilled the spirit and substances of your instructions in a most praiseworthy manner. In like measure THE JOURNAL has been particularly alert and forceful in interpreting your actions to the membership. Tremendous changes have taken place in our conception of society, and life is moving forward with a constantly accelerated momentum. Our final objective or destination may be obscure, yet change there will be. Organized medicine is the spirit of service and is founded on loyality to traditions. It is in essence a fidelity to an ideal. It makes for continuity of effort and endows organizations with character. Medical progress is not a static principle but a dynamic concept of service to the community for the taking care of the physical and mental condition of society. By constantly accepting the advances in science, organized medicine has accelerated the health of the people and reduced the measure of illness. Organized medicine believes that it is by this dynamic quality of scientific progress that good medical practice has been given and will continue to improve, and that fundamentally the question is quality of medical service and not the cost of medical service.

There are a number of major problems to be solved. The question of medical indigence—a condition untouched and unanswered in all systems of compulsory health insurance—is constantly before us and should engage our serious consideration. Are we prepared to accept the following propositions?

1. That every practitioner believes that the proved indigent is entitled to medical services free of all charges and that the cost of this service should be paid by taxes levied on the general population.

2. The principle that indigence is a local problem and should be handled in the area in which it arises.

3. The extension of medical services to the indigents in their homes and the doctors' offices with remuneration to the physicians on a capitation basis under the direction of the county medical society, all free services to indigents to be rendered by the physicians or outpatient department of the hospital within the geographic or regional zone in which the indigent resides.

4. The certification of indigents, fairly, sincerely, honestly and sympathetically by the application of standards of eligibility, by central bureaus under the department of welfare, with proper representation from the county medical society. It should not be the function of the outpatient department to pass on the validity of indigents, nor should they admit for free services those that are not in truth indigents.

5. A medical census of the indigents, to learn what our load is and how to take care of it. There should be devised a positive means of identification to prevent padding of the lists.

6. A limitation of the number of patients that may attend any one clinic. Since it is claimed that there is no profit in clinic and outpatient department services, there should be no desire for a hospital to increase the number of outpatients beyond its capacity to take care of them. To save valuable time, with the economic loss, clinics could be run with a limited number and on an appointment basis.

7. The payment of a fair remuneration to all physicians working in outpatient departments or giving medical services to the indigents in their homes. This remuneration must not be so low as to bring with it an inferior medical practice and the palliative bottle of medicine. It should not be too high. A fair average can be worked out and still maintain the best qualities of scientific medicine. In the planning of the details of this service it might seem wise to set up a special subdivision of activity under the auspices of the county medical society.

8. The unequivocal opposition to all forms of compulsory health insurance. Insurance schemes tend to relieve the individual of his own responsibility and to increase the prolongation of illness. In short, under an insurance scheme it is profitable for a person to be sick.

9. It is apparent, without wishing to be invidious, that there are, medically speaking, backward areas where the paucity of population and physicians, or its low level economically, or its extreme congestion and poor living conditions render it impossible to provide a fair degree of medical services under the present personal remuneration basis. In such areas it is desirable for the local or state health agencies to set up a laboratory service in chemistry, pathology and bacteriology for the use of practitioners in that area, these laboratories to be established on a regional or geographic basis and with and by representation by the local county medical unit and/or the state medical society. This service is to be a purely diagnostic laboratory service for physicians only, such as exists in our more forward looking states with regard to Widal, Wassermann and other diagnostic procedures. No treatment in any form should be provided under this set up.

10. The studies on rural medical service should be continued and general principles and policies elaborated for consideration by the House of Delegates. The employment by the government of medical personnel for services in unusual or geographically remote areas has been recommended.

11. What are we to do with "catastrophic illness?" By catastrophic illness I mean the emergency that is expensive and for which no ordinary family can budget. Its emergency character, its expense and the necessity for immediate help render it an

important item in the conception of any medical service. It probably represents from 8 to 10 per cent of acute illness at any one time.

It seems to me that these are not unattainable objectives but can be brought into being by a mutual consideration of the problems between the various parties interested and organized medicine.

A recent event in regard to health insurance in British Columbia is not without its significance. Agitation for such insurance began to take form when a royal commission on state health insurance and maternity benefits was appointed in April 1929. The final report of the commission, published in 1932, recommended "suitable compulsory health insurance including maternity benefits." The British Columbia Medical Association and the Canadian Medical Association laid down the principles that they felt should be included in such a law. Assuming the acceptance of these principles, a majority of the members of the British Columbia Medical Association in 1934 stated that it would approve a plan. In 1935 a plan was proposed by a provincial committee, which included all these principles and was generally accepted. When the time came for enactment, it was discovered that the government refused to assume any financial responsibility or to appropriate any money for the care of the indigent and the low income classes. Opportunity was given for thorough consideration of these objections and of the law as a whole, and then the 635 members of the College of Physicians and Surgeons of British Columbia were questioned as to whether they were willing to serve under the law. As has already been reported in THE JOURNAL, votes were received from 632, of whom 619 voted against the plan and thirteen in favor. Since it was manifestly impossible to introduce any system of sickness insurance against such a united front of the physicians, the Premier issued instructions to postpone operation of the law.

There rests on the medical profession one obligation that is superlative to all others. We have received from the past the splendid edifice of modern medicine. It is our natural duty to hand that on to generations yet to come, with the splendid spirit of science and the spirit of loyalty. The ranks of organized medicine must stand fast, must speak unanimously with one resonant voice, so that medicine shall be free to explore the unheralded realms of science and march forward with increasing effectiveness. Hundreds of years ago it was stated that "where there is no vision, the people perish."

Address of President-Elect J. H. J. Upham

The Speaker presented the President-Elect, Dr. J. H. J. Upham, Columbus, Ohio, who delivered the following address, which was referred to the Reference Committee on Reports of Officers:

Mr. Speaker and Members of the House of Delegates:

In the past twelve months the opportunity and privilege have been given me to attend sessions of the component state societies of the American Medical Association and allied medical society meetings in seventeen states—from Vermont to Utah, from Wisconsin to North Carolina—thus gaining more or less a cross-section view of our medical organization, medical practice and the desire for the acquiring of self improvement in medical information in these areas.

In such an itinerary one is greatly impressed by the great differences in the area of many of these states, the variation in the population and the prevailing types of occupation as they affect the medical profession and medical practice.

Some relatively small states are densely populated. They have large cities with manufacturing and mercantile interests, and considerable tributary suburban areas with relatively smaller rural population. In such states one sees all types of medical practice, industrial, urban, suburban and rural, but even in the last named few areas are so isolated as not to be in fairly convenient reach of hospital and laboratory aid. Therefore, medical organization is relatively simple and is efficiently carried on; medical practice is maintained on a fairly high average plane, and the interest in self improvement in medical information is correspondingly evident.

Other states may be four or five times as large, with populations one tenth as great. Some of these have huge stretches of prairie or mountainous areas with resulting isolation of the widely scattered inhabitants largely engaged in agricultural pursuits. In these areas the difficulties of maintaining medical organizations and providing even relatively adequate medical care may readily be seen. The progress that is being made and the interest in medical activities and medical progress are gratifying when one notes the relatively high percentage of membership attendance at the annual state meetings in spite of the often considerable sacrifice of time and effort entailed.

One is further impressed by the number and variety of other conditions that affect the medical profession and medical practice, which bring many and varied problems peculiar to America and different from practically all other civilized countries. Some of these are the diversity of climatic conditions from Maine to California and from the Dakotas to Florida. Largely because of these, together with topographic accessibility to foreign countries, there have been definite trends in immigration, causing different racial mixtures in various sections. To realize this in general terms, it is only necessary to mention the large element from middle and southern European countries settled in our metropolitan cities of the East, the influx from northern Europe and especially the Scandinavian countries to the Northwest, the immigrants from the Orient and Mexico in the West and Southwest, and the large Negro element in the South. From these topographic and racial conditions alone one may see the insurmountable obstacles to providing a standardized practitioner or a single standardized type of medical practice.

We are rather prone to pride ourselves on our educational system in this country; on our number and excellence of high schools and colleges. It is probably true that illiteracy is relatively low and that cultural and technical education is on a high average plane. When, however, we note everywhere the great number of parasitic pseudoscientific healing cults prevailing today and the flourishing "patent" medicine and proprietary nostrum companies, and see highly educated people following after these false gods and patronizing charlatans, we become pessimistic and wonder whether intelligence has kept pace with education. The explanation would seem to be either that there is a too general lack of information on the part of the public in health matters and a consequent failure of appreciation of modern scientific medicine, or that too many have experienced failure of relief from too large a proportion of medical practioners, or perhaps both of these reasons.

Finally, as one travels over the country one is impressed by the feeling of unrest in medical circles, manifested in the frequent discussions of the socialization of medical practice, the resentment against the charges of the prevailing inadequacy of medical practice, and medical responsibility for the alleged excessive costs of medical care.

At present the best minds in our organization are unceasingly considering the latter widely publicized questions, and information is being gathered and careful studies are being made of experiences in other countries as well as in our own. Those familiar with the ideals and policies of the leadership of the American Medical Association know full well that these policies aim toward evolution rather than revolution.

Our association is not reactionary nor is it struggling to maintain the status quo merely because it is the status quo. Rather, it is resisting with all its power the suggestions of theorists and experimenters of any and all schemes which would impair or cause deterioration of the quality of medical practice in this country.

In the meantime, two lines of organization activities might engage the attention of this body: first, the subject of the continued education of our members after graduation, and, second, the better informing of the public with regard to modern scientific medicine and health matters in general.

It may be said, and said truly, that both of these are already a well established part of the activities of the Association. The Council on Medical Education and Hospitals has done a monumental service in the grading of hospitals for the training of interns and stimulated the medical growth of the attending physicians by the requiring of monthly meetings of the staffs. The general organization plan of the Association requires meetings of the component county and state societies. From a questionnaire sent out to representative areas of the country, the attendance at these is relatively excellent. That these are

not enough to satisfy the urge of the general profession for medical information, however, is shown by the fact that there are listed in the latest edition of the American Medical Directory 140 additional special and sectional societies holding at least one or more meetings a year.

The number of medical society meetings has become burdensome, and a study of the programs shows a lack of systematic planning. It would seem opportune to recommend to the Council on Medical Education and Hospitals that its next logical step should be to survey the present conditions, and particularly to study the possibilities of the traveling postgraduate courses organized already in some states through the cooperation of the state associations and medical colleges in those areas with the hope of bringing modern medical developments to practitioners living in the more isolated areas, who are unable to attend meetings often because of lack of accessibility to the usual meeting places.

With regard to the education of the public, the work of the Bureau on Health and Public Instruction is greatly to be commended, and its work is well supplemented in some states.

It would, however, be a great aid in extending this increasingly essential activity if this body would draw the attention of all the component societies to the almost overwhelming mass of misinformation and false statements constantly issuing through the radio, through the daily press and through some so-called popular magazines, directly inspired by antimedical sources.

I would suggest for your consideration the thought of the advisability of recommending to the Board of Trustees the calling of a conference of representatives of the component state societies to consider this subject, or the making it a special topic for consideration at the next Annual Conference of State Secretaries, in the endeavor to stimulate a greater interest and seek some general country-wide program of systematic effort correlated with that of the national organization.

REPORTS OF OFFICERS

Report of the Secretary

Dr. Olin West presented his report as Secretary, which was referred to the Reference Committee on Reports of Board of Trustees and Secretary.

Report of the Board of Trustees

Dr. Rock Sleyster, Chairman, presented the report of the Board of Trustees, and stated that at a meeting of the Board, June 6, a resolution was unanimously adopted recommending to the House of Delegates that a Council on Industrial Health be established. The report of the Board of Trustees was referred to the Reference Committee on Reports of Board of Trustees and Secretary, except those portions of the report referring to the Bureau of Legal Medicine and Legislation, to the Bureau of Medical Economics, to the Bureau of Health and Public Instruction and to the report on Occupational Diseases and Industrial Medicine, which were referred to the Reference Committee on Legislation and Public Relations; those portions of the report referring to a National Department of Health and to the Extension of Medical Service to the Indigent, which were referred to the Reference Committee on Executive Session, and that portion of the report concerning the Motion Picture on Syphilis, which was referred to the Reference Committee on Hygiene and Public Health.

Address of Colonel W. W. Evans

The Speaker introduced Colonel W. W. Evans, representative of the American Bar Association, who addressed the House as follows:

Mr. Speaker and Members of the House of Delegates of the American Medical Association:

At this moment I feel entirely inadequate to discharge a duty which was suddenly wished on me yesterday afternoon at a time when I had just thought to recover from the conflicts and the assaults of a body of brother lawyers whom I essayed to lead in their annual meeting.

Two days of searing conflicts marked our efforts, and I thought on Sunday that I would rest and refresh myself, and my only justification for appearing here today is that this may afford you a little opportunity of rest and refreshment from committee reports.

I come here under more or less false auspices because in the first place I wear a badge to which I am not entitled. I am not one of those medicolegal gentlemen who practice not only in the courts but on their fellow men, nor am I an ex-president of the American Bar Association. Had my parents wished on me the name of Charles as a Christian name, and the name of Hughes as a surname, and had I been able to wish on myself a glorious growth of hirsute ornaments and give me a cerebrum and a cerebellum which would do justice to a Chief Justice of the United States Supreme Court, I might have been able to fill that appellation.

I only hope that your Secretary may be as excellent a prophet as he is poor as a historian. However, I do come to you with a state of almost innocuous desuetude—I have been stewing in my own juices for the last hour, and all of the poisons which have been generated in the strife of the legal meeting have more or less come from within me.

But it is indeed a pleasant duty which I have to discharge this morning. I must say that I had little expected to address you on the close relationship of the American Bar Association and the American Medical Association.

In the few brief days that I spent in the legislature of New Jersey I had the opportunity of coming in close contact with the medical profession at a time when the medical profession of New Jersey was gravely concerned over its future by reason of the inroads of those who were known as chiropractors, chiropodists and others who sought to practice medicine. After they had met defeat after defeat at the hands of the legislature by a reasonable wall of propaganda that had put the medical profession in a very awkward and embarrassing position, they were said to be the monopolists of the medical field. However, while I had been against the medical profession by reason of the onslaughts of my own brother-in-law, who is a distinguished member of the profession and who sought to convert me by severe strictures on my intelligence, I finally was waited on by four very distinguished members of the medical profession. I think one of them was a surgeon of international reputation, Dr. Harris, a Dr. Todd, who was a general practitioner of very fine reputation in the community, Dr. McBride, who later became the president of the state Medical Society of New Jersey, and one Dr. McCoy, another distinguished surgeon. Those men labored with my youthful intelligence for somewhat like three hours before they began to convince me of the error of my ways, and they showed me by convincing proof of the extent to which our chiropractic brethren had transgressed the limits imposed on them by law, and by reason of that fine approach, for which I give the medical men great credit, they converted me, and I in turn converted a number of the members of the legislature, so that an adverse decision was changed into one that overwhelmingly passed the medical legislation of that year and put the other boys in their place.

From a background such as that, I conceived a very sympathetic interest in the medical profession, and since that time, by reason of representing litigated interests, I have been called on to expend large sums, or reasonable sums, I should say, in the retention of proper medical services by way of expert testimony, and I have also been thrown into that field which called for expert advice with respect to the retention of a field of experts and the reduction of one expert which hasn't met either with the approval of the medical profession or of the legal profession by reason of the fact that it seemed to deprive the medical profession of great emoluments.

Those things have given me a deep appreciation, so when I accepted this assignment I did so with great gratification.

I wish to convey to you at this time the heartfelt appreciation of the American Bar Association for the fine collaboration evidenced by the members of the American Medical Association. You have our common problem, you have a problem which seeks the socialization of medicine; we have a problem which seeks the socialization of the American Bar Association. We haven't the problem that you have, and that is that you have a very adequate reserve and a very splendid treasury which might prove to be a ground of assault by certain socialistic influences which are seeking to level all of those who are in a

somewhat better pecuniary position than the others, so that you may ultimately be reduced to the status of the American Bar Association financially, but I hope that day will never occur, because I believe that with the union of these two great professions and with our desire to bring home to the public the necessities of the individual initiative and the individual advancement and of the opportunity of the young man, no matter how small his stature may be, no matter how unable he is to get the great benefits derived from the educational facilities, those opportunities may still be afforded the young man, and the young man may be able to rise to those great heights which are open to the whole field at the present time.

We have our common problems, and we are laboring with them sympathetically with you, and I trust that at all times you may feel free to consult with the American Bar Association, knowing that you have a sympathetic haven for your problems which have to do with the legal profession and that you may receive there that fine measure of intelligence which your problems ought to receive.

I thank you very kindly.

Report of the Judicial Council

Dr. George Edward Follansbee, Chairman, presented the report of the Judicial Council, which was referred to the Reference Committee on Amendments to Constitution and By-Laws.

Report of the Council on Medical Education and Hospitals

Dr. William D. Cutter, Secretary of the Council, presented the report of the Council on Medical Education and Hospitals, together with supplementary reports, which was referred to the Reference Committee on Medical Education:

SUPPLEMENT A. REVISION OF STANDARDS FOR SPECIAL EXAMINING BOARDS

Four years ago at the Milwaukee session a resolution was adopted authorizing the Council on Medical Education and Hospitals to give its approval to such special examining boards as should comply with and conform to standards to be formulated by the Council.

A year later, at Cleveland, an outline of these standards for an acceptable board had been approved by the Council and was submitted to the House of Delegates and ratified, and has been in effect since that time. One of the items in this sheet of standards had to do with the period of training to be required of candidates for certification by these boards. It was realized that a period of five years would call for more intensive study and more opportunity for study than was then in existence, but it was hoped, by notifying all who would be interested that this period of training was required before the candidate would appear before a board, that better opportunities and more opportunities for training would be provided, which has been the case. It is still true, however, that adequate opportunities for graduate study for all of those who are seeking to qualify themselves as specialists are not yet available.

It is also true that there is not yet complete agreement and uniformity with regard to the application of this five year period of training for specialists. The Council has, therefore, suggested that this outline of standards for special boards be amended so that the effective date of this particular educational requirement be advanced from Jan. 1, 1938, to Jan. 1, 1942, in the expectation that during this four year period better opportunities for study and training will be provided and also that complete harmony and unanimity of opinion may be reached with regard to the necessity for such a period of training in connection with all the specialties.

Another item is suggested for your consideration and approval, having been recommended by the Council on Medical Education and Hospitals. This has to do with the credentials of men whose education has been obtained outside of the United States and Canada. The Council on Medical Education and Hospitals has been able to study, to keep in touch with and to grade the medical schools of the United States and Canada. We have no information concerning the character of education offered students in medical schools in other lands.

In order that there should be some guarantee that candidates who come before these special examining boards, if they present credentials from other countries, have received adequate training in the fundamentals of medicine, it was suggested that such candidates be required to pass parts 1 and 2 of the National Board of Medical Examiners, which would constitute a uniform requirement for all such candidates coming into this country. The Council has approved of that revision of these essentials, and submits it now to you for your consideration.

SUPPLEMENT B. SURVEY OF MEDICAL SCHOOLS

A survey of medical schools which has been conducted by the Council during the last two or three years is briefly mentioned in the report which you have in your hands, but it was felt that we should give to the House of Delegates at this time a more detailed statement of the procedure, methods, findings and results of this survey, which is being distributed to the House.

SURVEY OF MEDICAL SCHOOLS

Thirty years ago the Council on Medical Education published the first classification of medical schools. Now it has just completed a comprehensive resurvey of the undergraduate medical course in the United States and Canada. The contrast between present conditions and those of a generation ago is too striking to pass over without notice. At the time the Council was created, most of the medical schools in this country were frankly proprietary institutions, and university affiliations, where such existed, were tenuous or merely nominal. Medical sciences, for the most part, were taught by practitioners without special training. Laboratories were inadequately equipped and laboratory work poorly supervised. Bacteriology and biochemistry were just being introduced into the curriculum. Embryology was scarcely recognized and the study of anatomy was purely descriptive, with more emphasis on memorizing the textbook than on careful dissection with correlation of structure and function. Clinical teaching consisted almost exclusively of lectures and demonstration clinics without personal contact between student and patient. At Johns Hopkins, it is true, Dr. Osler had introduced the British system of clinical clerkships, but other schools were slow to comprehend the merit of this method of instruction.

Since the publication of the Carnegie Report in 1910, the improvement of medical teaching in this country has been phenomenal, unparalleled. A hundred low grade schools have merged with others or dropped out of existence. Entrance requirements have been raised to at least two years of college work. Trained teachers have been provided in the laboratory subjects. In the clinical branches, dispensaries and hospitals are recognized as essential teaching facilities, and a clerkship, which is the modern form of apprenticeship, appears in almost every curriculum. Postmortem studies correlated with clinical studies are much more widely employed.

Progress along these lines, however, has been neither uniform nor continuous. Plans for development were interrupted by the war, and after the war there was necessarily a period of readjustment. Because of the creation in 1925 of a "Commission on Medical Education" with ample funds at its disposal, the supervision of the Council was, for a period, somewhat relaxed. It soon became evident that there was need for a thorough-going study of the aims and methods of medical education, and in 1933 the Council addressed itself to this task.

Some features of the survey have already been discussed by Dr. Wilbur (THE JOURNAL, March 6, 1937) and Dr. Weiskotten (THE JOURNAL, March 27, 1937) but it seems appropriate at this time to make to the House of Delegates a more formal report of the Council's activities in this connection. After all the recognized and two unrecognized schools in the United States and Canada had been visited, the Council analyzed the reports of the schools, the comments of the inspector, and all other available material. For the purpose of comparative study, ninety-six items were chosen and the schools arranged in an order of excellence with respect to each of these criteria. The results were then plotted on a chart in accordance with the procedure recently adopted by the North Central Association of Colleges and Secondary Schools. A pattern map, so constructed, has already been sent to each of the four year medical schools in the United States and a similar report will shortly be furnished to the Canadian schools and the so-called

two year schools. A sample of these maps may be seen at the booth of the Council, No. 649, in the Scientific Exhibit.

During the progress of the survey the Council has discovered in certain institutions conditions so unsatisfactory that it was deemed necessary, in the interests of prospective medical students and of the public, to remove them from the Council's approved list. Others were placed on probation. Still others were warned of deficiencies and were granted a period of grace during which their shortcomings might be corrected. The Council's influence, applied in these several ways, has already produced striking results. A number of schools have completely reorganized and have made fundamental improvements in student and faculty personnel. They have also secured more adequate financial support. If nothing more were to be accomplished by the survey, these changes alone would justify the Association's expenditure of time and money.

Among the defects noted by the Council may be mentioned the lack of a sound type of university control. In some cases the university affiliation is merely nominal and the medical school derives little or no benefit from the relationship. In some instances, on the other hand, the university, in the supposed interest of unity, sets up departments in which the interests of other groups are merged with those of medical students, to the detriment of the latter.

In their organization the medical schools run the gamut from the extreme democracy of faculty control to monarchical control by the dean. It may be said, however, that the schools which have shown the greatest development are those which have an efficient dean who is able to devote himself unreservedly to the upbuilding of his institution.

Probably the most important factor in determining the output of any school is the character of the input. More and more it becomes evident that a poor environment, while it may retard development, cannot ruin a really good intellect, and that, conversely, even the very best school cannot make a successful student or practitioner out of an inferior mentality. The problem of the selection of students is therefore one of the most important, if not the most important responsibility of any medical school. Only 12 per cent of the medical students now admitted have had less than three years of college work but it cannot be too strongly emphasized that, in judging the preliminary education of a candidate, quality is more important than quantity and that uniformly high scholastic attainment is a better guaranty of success than any number of "units" or degrees. The extremely rapid advances now being made in the field of chemical physiology and the rapidity with which these discoveries are finding clinical application may render it desirable to raise the minimum requirement for entrance to three years and to exact a more thorough training in organic and physical chemistry.

The curriculum requires, of course, constant readjustment. In this process of adaptation some schools lag behind, especially in the continued emphasis on didactic teaching, by means of lectures, quiz, and demonstration clinics. Bedside teaching in hospital wards demands more teachers and more time, as well as more ample clinical material, but the superiority of the results cannot be questioned. In arranging courses, some schools follow the block, or concentration, system. In its extreme form the student devotes himself exclusively to one subject until it is finished and then takes up another. Happily, few schools carry it so far. Generally speaking, however, there is a tendency, especially in the larger schools, to split the program into a considerable number of units, following a variable sequence, which are independently accredited. At the opposite pole, the French universities begin clinical teaching in the first year and carry it concurrently with the laboratory courses for several years. Somewhere near the middle is surely the best road. There is difficulty in making room for new subjects in the curriculum. Medical science advances rapidly, and the knowledge and skill required of a practitioner is vastly greater today than it was twenty years ago. The schools seem to feel that four years plus an internship is all the time the student can afford to give to his professional training. Is there any solution of this dilemma? Some schools have already found a way by utilizing a substantial part of the summer vacation. Some of the new subjects clamoring for attention are psychiatry and its broader aspect, mental hygiene; economics and sociology as applied to the practice of medicine; industrial medicine and surgery; fractures and other traumatisms, the ever increasing concomitants of automobile traffic; physical therapeutics, a field which until the war was left largely to quackery; endocrinology and organotherapy, and medical jurisprudence in its broader aspects. The physician who, in the next two decades, will satisfactorily discharge his obligations to society must have more than a cursory acquaintance with all these phases of medicine. Diagnosis and treatment are being transformed under the influence of such new developments as radiology and immunology.

In determining the quality of the work done in an institution, the qualifications of the faculty are, next to the selection of students, the factors of greatest importance. At the time of the Council's first survey of medical schools the need of trained teachers was emphasized. Unhappily, the phrase "full-time" was used to differentiate those who chose teaching as their profession from the practitioners who engaged in teaching as an avocation. The important distinction, of course, is not in the time element but in the training, ability and interest of those who constitute the faculty. In the laboratories, standards of personnel have been greatly advanced; but in the clinical branches the controversy still rages over the merits and the functions of "full-time" and "part-time" men. The question cannot be answered by a time clock. It concerns the training experience and, above all, the inherent interest of those who teach. Obviously the man who assumes responsibility for directing a clinical department such as medicine or surgery must devote to his academic duties much more than a few hours a week. On the other hand there is an increasing weight of opinion supporting the view that the teacher who completely renounces the experiences of private practice loses something of value to his students as well as to himself. In medicine, as in other departments of the university, the professor should be a teacher by vocation and should share with his colleagues the same academic responsibilities and liberties. Another problem of growing importance concerns the increasing numbers of teachers in the preclinical branches who do not have a medical degree. Individuals may readily be cited who have been conspicuously successful as teachers of anatomy, chemistry and other subjects who have no formal training in medicine. As a general rule, however, it is our conviction that those who have enjoyed a clinical experience as students and interns will make better preclinical teachers than those who have not. In analyzing the training of those who hold responsible teaching positions it is disconcerting to find that some of our best known universities permit candidates for advanced degrees to earn them concurrently—that double credit is allowed for the same period of study. It would seem that, if graduate degrees are to have any worth-while significance, this practice should be abruptly discontinued.

With the best of faculty and the best of students medicine cannot be taught without patients, and one of the most serious problems confronting medical schools today is the securing of clinical material, adequate in kind and amount, under proper university control and readily available for teaching. For the university itself to own and maintain such facilities entails an enormous financial burden. Without such ownership the medical school is dependent on such affiliations as it can negotiate with tax-supported hospitals or those privately endowed. In the Northeastern section of the country, large endowments have accumulated and there are instances of conspicuously satisfactory affiliations between universities and private hospitals. In the Central and Western portions of the country endowed institutions are rare, and greater dependence must therefore be placed on governmental institutions with all the inherent dangers of political intervention. If a school does not own a teaching hospital it should at all events secure the right to nominate the attending staff in those services which are used for purposes of instruction. As to the minimum number of patients needed for satisfactory clinical teaching the Council has as yet no figures, but it is hoped that in a further report some light may be thrown on this subject.

So far as physical facilities and equipment are concerned, the medical schools are well off. During the last decade enormous sums of money have been spent, not always wisely, on building for laboratories and hospitals, so that there are very few schools

which lack an adequate physical plant. In spite of this fact, during the depression some schools yielded to the temptation to enlarge their classes and consequently suffered from overcrowding.

In its first survey the Council discovered that schools which depended exclusively on the income from students' fees were unable to meet the prevailing standard, and from that day to this it has become increasingly evident that financial resources other than from tuition fees are absolutely necessary to maintain a satisfactory level of instruction. Such resources may be either endowments or governmental appropriations. Before the depression it appeared that the private institutions were more generously supported. Their status in the next decade would be difficult to forecast. The budgets of medical schools range from $1,600,000 to $93,000, the median being $231,000. Obviously a large school costs more to operate than a small one, but the costs do not vary directly as the number of students. There is also a wide spread in the amount expended for adminstration, overhead, and maintenance of plant. The Council believes that the best index of the adequacy of financial support is expenditure per student for instruction, and this figure has been developed in the pattern maps sent to each school. It varies from $3,600 to $170. The median, which is most significant, is $535.

Although the time devoted to anatomy has been materially reduced, the teaching of this subject in the leading schools has been greatly improved; gross and microscopic anatomy, and embryology are more closely correlated. Charts, slides, cross-sections, models and x-rays are employed as teaching aids. In some schools, students are encouraged to construct their own models. Functional anatomy and general principles are being stressed rather than the accumulation of a vast amount of minute detail. All schools, however, have not progressed equally in this direction, and considering the country as a whole, the teaching of anatomy leaves a great deal to be desired.

Among the preclinical sciences biochemistry stands out as the subject which, on the average, has attained the most satisfactory level. Paradoxically, it is the subject in which there are the fewest teachers who have a medical background. This should not be construed as indicating that such a background is not desirable, but may be explained by the fact that chemistry is a popular subject and that there is a vast number of graduate students in this field. From among so many it is not difficult to supply the small number of vacancies in medical schools.

Departments of physiology are for the most part well organized. There is manifest a tendency to reduce the time devoted to simple experiments of the muscle nerve type and introduce more observations on intact animals including the human subject. The place of physiology in the curriculum is not yet entirely clear, especially its temporal relationship to biochemistry. In the selection of teachers of physiology, at least, it would seem that a knowledge of medicine and some clinical experience should be more generally insisted on.

Pharmacology, of all the preclinical subjects, is most generally neglected. Of sixty-six schools, barely half have organized independent departments of pharmacology with a faculty consisting of men who have received special training in this field. Since pharmacology is the foundation of therapeutics, such conditions should be promptly corrected.

Under the influence of the rapidly developing sciences of immunology and serology, bacteriology is undergoing a transformation. Experimental methods are more generally employed and less stress is being placed on the classical descriptive bacteriology of a generation ago. The increasing prevalence of so-called tropical diseases gives a new importance to parasitology, with which, in some schools, bacteriology is being combined.

Pathology is definitely recognized as the subject which ties together the preclinical and the clinical sciences. It extends through all the later years of the course. Rapidly it is outgrowing the older conception of descriptive morbid anatomy, and is being closely integrated with clinical medicine. Increasing emphasis is being placed on the study of fresh material and the correlation of the patient's history with autopsy findings. Experimental methods are more frequently used in teaching. It is evident that pathology cannot be satisfactorily taught if isolated from the clinical departments of the medical school.

Medicine, so-called internal medicine, is the most broadly inclusive of all the clinical branches. It is responsible for teaching the fundamental methods of examination and diagnosis to which are added later the differentiated technics of the specialities. In a few schools the curriculum has been based on a recognition of this fact and the student is given his practical experience in medicine before he enters on a clerkship in surgery, pediatrics or obstetrics. The medical clerkship is also of longer duration than the others because of the greater scope of the subject and the larger variety of diseases covered, and also in order that sound habits of history taking and of physical and laboratory examination may be developed. Unfortunately, owing to large classes, or limited clinical material, this program has not been widely adopted. Too often the student rotates through his clinical assignments in a sequence determined by chance or the convenience of the registrar's office, and may find himself, without previous clerkship, attached to a service in pediatrics. It is doubtful whether this procedure can be justified, even on the ground of necessity.

The better schools clearly recognize the fact that it is not the function of the undergraduate course to train surgeons. Emphasis is placed on diagnosis, minor surgery, and emergency work, including fractures. Major surgery, and especially operative technic, is largely left for the internship and residency. The day when students spend long hours in the surgical amphitheatre is, or should be, past.

The teaching of obstetrics is at a lower level than that of the other major clinical departments. Comparatively few schools offer to their students an adequate practical experience under competent supervision. This may result from a variety of causes, one of which is, undoubtedly, the failure of administrative authorities to provide access to a sufficient amount of clinical material. Another may be the feeling on the part of teachers that the practice of obstetrics should be reserved for specialists and that therefore the ordinary undergraduate does not need much training along this line. Still another may be the fact that in many schools obstetrics is not an independent department but is combined with gynecology. In these circumstances, if the head of the combined department is a gynecologist, obstetrics may suffer.

Pediatrics is fortunate in that public interest in this subject has provided admirable facilities. Special hospitals, dispensaries, feeding stations and well-baby clinics afford a wealth of material most of which is utilized for teaching. In a few institutions there is a strange reluctance to permit medical students to enter the children's wards. In general this department rates well.

Preventive medicine, although of undoubted importance, has not yet developed a clear cut and generally accepted objective, so far as the teaching of undergraduate medical students is concerned. In some institutions a good deal of time is spent in demonstrating the activities of a state or city department of health. In others, students are required to make and report on a sanitary survey, while still others act on the assumption that for the man in practice the most important thing is that all of his daily contacts should be imbued with a realization of the importance of prevention and that this attitude can only be instilled by clinical teachers who exemplify it in their own practice. Further study of this problem is an obvious need.

Psychiatry is another subject which has not yet found itself in the medical curriculum. The old fashioned demonstration clinic of advanced cases is no longer in great favor. In some quarters efforts are being made to introduce a psychiatric examination generally into the study of all patients even though the present complaint may not seem to involve mental derangement. There is a growing demand for the inclusion in the preclinical curriculum of introductory courses in psychology or psychobiology.

Some years ago there was a widespread feeling that practice in the eye, ear, nose, and throat fields should be reserved for specialists and that therefore they should not be included in the undergraduate curriculum. They were to be "kicked upstairs into the graduate school." This process has been carried so far that many recent graduates do not know how to make an examination sufficient to enable them to determine whether or

not the patient needs to be referred to a specialist. The schools should more clearly define their responsibilities in this field.

Few schools are giving adequate attention to instruction in physical therapy. The great benefits which may be derived from this form of treatment have been clearly demonstrated since the war. Every physician should be familiar with the indications for physical therapy and with the results which may be attained by its use.

Report of the Council on Scientific Assembly

Dr. Irvin Abell, Chairman, presented the report of the Council on Scientific Assembly, which was referred to the Reference Committee on Sections and Section Work.

Report of Committee to Propose Amendments to By-Laws Providing for Fitting Recognition to Fellows Rendering Distinguished Service in Science and Art of Medicine

Dr. H. H. Shoulders, Chairman, presented the following report of the Committee to Propose Amendments to By-Laws Providing for Fitting Recognition to Fellows Rendering Distinguished Service in Science and Art of Medicine, which was referred to the Reference Committee on Amendments to the Constitution and By-Laws:

Pursuant to the provisions of a resolution adopted by the House of Delegates at the Kansas City session in 1936 a committee was appointed by the Speaker of the House, composed of Drs. J. W. Amesse, Colorado; Grant C. Madill, New York; J. D. Brook, Michigan; J. F. Hassig, Kansas, and H. H. Shoulders, Tennessee, as chairman.

Your committee submits the following as a report of its activities:

Much of the work of the committee has been done by correspondence. As a result of the exchange of ideas some fairly definite conclusions were arrived at. Final considerations were given the matter in a meeting of the committee held in Atlantic City, Sunday evening, June 6.

Our interpretation of the provisions of the resolution creating the committee is that our duties are twofold: First, to consider the proprieties and wisdom of creating some means by which the distinguished services of Fellows may be recognized in a fitting manner other than by election to office, and, secondly, in the event of affirmative conclusions, to prepare suitable amendments to the By-Laws and present them for the consideration of the House of Delegates.

It is the unanimous opinion of the committee that such amendments should be enacted by the House and your committee has prepared some amendments to the By-Laws and submits them as a part of its report.

In this connection it should be stated that it was the duty of your committee to consider this matter in association with the Judicial Council. By correspondence the Chairman of the Judicial Council has been kept in touch with the activities of the committee and has given it every cooperation in the way of wise counsel and advice. At the meeting held in Atlantic City the evening of June 6, the Judicial Council participated in the deliberations of the committee.

PROPOSED AMENDMENTS TO BY-LAWS

Your committee submits the following resolutions proposing amendments to the By-Laws to create a Committee on Distinguished Service Awards and prescribe its duties and to create a distinguished service award:

Resolved, By the House of Delegates of the American Medical Association that the By-Laws of the Association be amended by the addition of a new chapter, Chapter XI, to follow Chapter X, as follows:

CHAPTER XI.—COMMITTEE ON DISTINGUISHED SERVICE AWARDS

SECTION 1. There is hereby created a special committee to be known as the "Committee on Distinguished Service Awards of the American Medical Association."

This Committee shall consist of five members and shall serve for a period of three years, except the first committee, two of which shall be appointed for three years, two for two years and one for one year.

Nomination for the Award may be made by any Fellow of the Association, provided the nomination is made in a manner prescribed by the Committee and not less than two months in advance of the next regular annual session of the Association.

SEC. 2. DUTIES AND POWERS OF THE COMMITTEE ON AWARDS. The Committee on Awards shall make its own rules of procedure not in conflict with these by-laws with respect to the performance of its duties, subject to the approval of the House of Delegates.

It shall consider the eligibility of nominees for the Distinguished Service Award of the American Medical Association on the basis of meritorious services in the science and art of medicine and shall submit its findings and recommendations to the Board of Trustees, annually, within a time limit fixed by the Board of Trustees.

In the event that more than five nominations are received, the Committee shall select therefrom a list of not more than five to be submitted to the Board of Trustees together with a brief statement of its findings with reference to each.

The present chapters XI, XII, XIII, XIV, XV, XVI, XVII, XVIII and XIX shall then become chapters XII, XIII, XIV, XV, XVI, XVII, XVIII, XIX and XX respectively.

Resolved, By the House of Delegates of the American Medical Association, that Chapter VI of the By-Laws be amended by the addition of a new section after section 4 as follows:

SEC. 5. TO ESTABLISH A DISTINGUISHED SERVICE AWARD OF THE AMERICAN MEDICAL ASSOCIATION. The Board of Trustees shall create and establish an award to be known as the Distinguished Service Award of the American Medical Association, which shall consist of a medal and a citation.

One Fellow of the Association shall be eligible to receive the award each year and shall be selected in a manner prescribed in these By-Laws.

The Board of Trustees shall consider the merits of nominees for the award recommended by the Committee on Distinguished Service Awards and shall select from the list not more than three Fellows to be balloted on by the House of Delegates. The Board of Trustees shall submit the list of nominees so selected to the House of Delegates for consideration, together with a brief statement of the findings of the Committee on Awards with respect to each nominee.

The House of Delegates shall select the recipient of the award from the list of nominees submitted by the Board of Trustees. The selection shall be by ballot in the same manner as officers are elected. The vote shall be taken immediately after the nominees are placed before the House by the Board of Trustees.

The Board of Trustees is charged with the duty of having prepared a suitable medal and citation each year, and is further charged with the duty of fixing the time and method of presentation.

Report of Committee to Study Contraceptive Practices and Related Problems

Dr. Carl H. Davis, Chairman, submitted by title the report of the Committee to Study Contraceptive Practices and Related Problems, which the Speaker declared would be discussed at the Tuesday afternoon Executive Session of the House.

Preliminary Report of Committee to Study Problems of Motor Vehicle Accidents

Dr. Herman A. Heise, Chairman, presented the following report of the Committee to Study Problems of Motor Vehicle Accidents, which was referred to the Reference Committee on Miscellaneous Business:

At the annual session of the American Medical Association held at Kansas City in 1936, the appointment of a Committee to Study Problems of Motor Vehicle Accidents was authorized by the House of Delegates, and the Board of Trustees was instructed to appoint the committee as now constituted. The Committee met in the Board of Trustees room in the American Medical Association building in Chicago at 10 a. m., March 19, 1937. Members of the Committee present were Dr. Herman A. Heise, Milwaukee, chairman; Dr. Burt R. Shurly, Detroit; Dr. Thomas A. McGoldrick, Brooklyn, and Dr. C. W. Roberts, Atlanta, Ga. Others in attendance were Mr. Richard Thrush, Assistant Director of First Aid of the American Red Cross in place of Dr. Cary T. Grayson, member of the committee, who was unable to be present; Mr. Sidney Williams of the National Safety Council, who had been invited by Dr. West to attend the meeting; Dr. Austin A. Hayden, Chicago, a member of the Board of Trustees of the American Medical Association; Dr. Morris Fishbein, Editor of THE JOURNAL, and Dr. Olin West, Secretary of the American Medical Association.

Dr. West opened the meeting by reading the following resolution on the appointment of a Committee to Study Problems of Motor Vehicle Accidents:

WHEREAS, The street is a battlefield, and thousands of our citizens are killed and disabled by reckless, incompetent and physically disqualified individuals; and

WHEREAS, The medical profession has stood for centuries past for the safeguarding of life and the prevention of injury; therefore be it

Resolved, That a committee of five be appointed by the President to survey and study the problems of motor vehicle accidents and injuries therefrom, and report to the House of Delegates; and be it

Resolved, That an appropriation sufficient to cover necessary expenses be provided for the study.

IMPORTANCE OF TRAFFIC ACCIDENTS

The committee agreed that we can continuously study the entire problem of traffic safety and give our support both as doctors of medicine and as individuals to every sound effort being made for safer roads, safer automobiles, driver education and better legal regulations and their enforcement. However, our present study should be directed particularly to a consideration of those physical and mental defects which account as contributing factors in unsafe driving. The importance of our problem can be better comprehended when we realize that motor vehicle accidents are the principal cause of fatal accidents in the age group of 5 to 64 and that, if the present rate of slaughter continues, one out of every twenty persons in the United States will be injured or killed in a motor vehicle accident within the next five years. An even more startling prophecy is that unless some drastic means of combating traffic accidents is instituted, two out of every three children now living will be injured in a motor vehicle accident in his lifetime.

DRIVER'S LICENSE LAWS

In most states no provision is made for the furnishing of evidence of physical or mental fitness of motor vehicle drivers. This condition is particularly deplorable since the National Safety Council has made available to all states a model driver's license code.

The importance of adequate driver's license laws is shown by a nine years trial. In this time, states having a standard license law have decreased vehicle death rates by an average of 20 per cent, while all other groups of states have increased their death rates, some more than 30 per cent. The committee recommends the adoption of the uniform driver's license law by all states, since this would be an additional factor in traffic safety and would not only give the states some control over the driver with physical and mental defects but would be of additional value in collecting records of the chronic law violators, the reckless, and the "accident-prone." Persons having bad records would be examined for physical, mental or psychologic abnormalities with a view toward correction or possible compensation for the deficiencies, or if this is not possible licenses may be revoked.

EDUCATION IN TRAFFIC SAFETY

The Committee recommends that the American Medical Association sponsor a campaign of education, keeping before the public the importance of physical and mental factors in accidents, including the influence of fatigue, ill health, disturbed vision or hearing, the effect of drugs, carbon monoxide, alcohol and the like. Incidentally, the almost indefinable subject of courtesy appears to be a factor in motor vehicle accidents. The control of a powerful instrument apparently inflates the ego of some otherwise meek individuals to the extent that they lose their appreciation of the rights of others.

ALCOHOL AND ACCIDENTS

The relationship of alcohol to traffic accidents demands further study. It is a surprising fact that the excess in the number of accidents over the expected number as calculated from traffic volume corresponds to the peaks in alcohol accidents as confirmed by chemical examination.

MEDICOLEGAL APPLICATION OF CHEMICAL TESTS FOR ALCOHOL

Since it is impossible to diagnose drunkenness adequately—drunkenness from the symptoms alone—it is important that the chemical observation of the blood, urine, saliva or breath for alcohol be used to confirm obvious intoxication. The Committee on the Driver of the National Safety Council has agreed that 0.15 per cent or more of alcohol by weight in body fluids is associated with mental and/or physical inferiority and that this figure is therefore valuable in legal cases. It must be understood, however, that much lower levels of alcohol are associated with definite impairment of judgment and particularly of self criticism. Also the attitude of this committee on the subject of alcohol concerns only traffic safety, and therefore drinking is considered only from the standpoint of time and place.

RED CROSS HIGHWAY FIRST-AID STATIONS

The committee wishes to congratulate the American Red Cross for its establishment of Highway First-Aid Stations. This is not only a life-saving measure but is apparently decreasing the numbers of accidents by making drivers conscious of the danger of carelessness.

RECOMMENDATIONS FOR FURTHER STUDY

It is recommended that hospitals aid in the investigation of accident causes from the medical standpoint and that the American Medical Association sponsor a symposium on the various phases of traffic accidents, the results of investigations to be presented at the 1938 session of the American Medical Association. Recommended subjects for further study are Physical and Mental Defects as Factors in Traffic Accidents and Effect of Drugs, Carbon Monoxide, Alcohol, Fatigue, and the like.

Reports of Special Committees

The reports of the Committee to Study Air Conditioning, the Committee on Asphyxia and the Committees on Scientific and Therapeutic Research, as submitted in the addenda to the Report of the Board of Trustees, were referred by the Speaker to the Reference Committee on Reports of Board of Trustees and Secretary.

Report of the Committee on Medicolegal Blood Grouping Tests

The following report of the Committee on Medicolegal Blood Grouping Tests was referred to the Reference Committee on Reports of Board of Trustees and Secretary:

To the Members of the House of Delegates of the American Medical Association:

The purpose of this committee was to report on the reliability of blood grouping tests when applied in medicolegal cases for the exclusion of parentage and in criminal cases for the individual identification of blood and other stains, with special reference to further legislation relating to blood grouping tests for excluding parentage. The report now submitted contains the conclusions and recommendations of the committee, based on a review of the literature and experiences of its members.

It was found advisable to consider the application of the tests for the exclusion of parentage and the examination of stains separately. It is also necessary to consider separately the classic four blood groups O, A, B and AB, discovered in 1901-1902, and the three types M, N and MN, found in 1928.

NOMENCLATURE

Before proceeding with the question of the forensic application of the tests, a few statements concerning the nomenclature are in order.

The Four Blood Groups.—Three different methods of designating the four groups are in use; namely, the Moss, the Jansky and the International nomenclatures. The relationship between the various designations of the groups and composition of the blood is given in table 1. The existence of two systems of designation by numbers has resulted in confusion on many occasions and has occasionally been responsible for transfusion accidents. Hence the Health Committee of the League of Nations has recommended the adoption of the International Nomenclature, which is based on the agglutinogen content of the red blood cells. Practically all scientific and many medical publications use this nomenclature exclusively, and the committee recommends its general use also in hospitals for blood transfusions and in reporting results of blood grouping tests to courts in forensic cases.

The M-N Types.—Depending on the presence or absence of the properties M and N in the red blood cells, three types of human individuals have been identified; namely, type M (individuals possessing agglutinogen M but not agglutinogen N), type N (individuals possessing agglutinogen N only), and type MN (individuals possessing both agglutinogen M and N). Individuals lacking both agglutinogens M and N do not exist.

To avoid confusion between the types M, N and MN and the blood groups O, A, B and AB the committee recommends that the term "group" be used only when referring to the latter and that the term "type" be used when referring to the more recently discovered properties M and N.

APPLICATION TO THE BLOOD GROUPING TESTS FOR EXCLUSION OF PARENTAGE

The development of the particular aspect of blood grouping tests as used for the exclusion of parentage falls naturally into two periods, namely, that from 1910 to 1930, in which interest was focused exclusively on the four blood groups, and that from 1930 to date, which has witnessed the application of the three M-N types.

TABLE 1.—*Classification and Composition of the Blood Groups*

International Nomenclature	Jansky Numbering	Moss Numbering	Cells (Agglutinogens)	Serum (Agglutinins)
O	I	IV	—	α and β
A	II	II	A	β
B	III	III	B	α
AB	IV	I	A and B	—

Application of the Four Blood Groups.—Ottenberg and Epstein in 1908 first suggested the hereditary nature of the blood groups, but their studies were limited to a few families. To von Dungern and Hirszfeld, who made the first extensive study of the heredity of the blood groups in 1910, and to Bernstein, who in 1925 evolved the theory of heredity now accepted by the investigators in the field, belongs the credit for the discovery of the mechanism of the inheritance of the blood groups.

According to Bernstein's theory, the blood groups are inherited by means of three allelomorphic [1] genes, A, B and O. Accordingly, there exist six genotypes, corresponding to the four blood groups, as is shown in table 2. From this theory it can be readily deduced to what groups the children may belong when the groups of the parents are known. Table 3 presents the inheritance of the blood groups under the Bernstein theory.

Table 3 may be summarized in two laws of heredity: 1. The agglutinogens A and B cannot appear in the blood of a child unless present in the blood of one or both parents (matings 1-6 in table 3). This is also known as the law of von Dungern and Hirszfeld. 2. Individuals of groups AB cannot have children of group O, and group O individuals cannot have group AB children (matings 7-10). This is known as the Bernstein law, since it is the direct result of his theory of the inheritance of the blood groups.

TABLE 2.—*Bernstein's Theory of the Heredity of the Blood Groups*

Phenotype*	Genotype*
Group O	OO
Group A	AA, AO
Group B	BB, BO
Group AB	AB

*Genotype refers to the genetic constitution; this depends chiefly on the genes. Phenotype refers to the actual makeup of the individual; it is determined by the interaction of heredity and environment. In the case of the blood groups, there is no serologic difference between individuals of genotypes AO and AA or genotypes BB and BO, since genes A and B are dominant over gene O.

A survey of the literature shows that, in a series of more than 10,000 families with 20,000 children which were studied by a number of investigators from 1910 up to present time, no exceptions to the first law of heredity have been established. Hence the committee feels safe in recommending the application of this rule without reservation.

With regard to Bernstein's law, a series of 4,000 group O mothers with their 5,000 children have been examined, and not one of the children was found to belong to group AB. In addition, more than 600 group AB mothers with almost 1,000 children have been examined and in only one case has there been what seems to be a real exception to Bernstein's theory. In this particular case, reported by Haselhorst and Lauer, the mother belonged to group AB and the child to group O. Therefore the committee recommends that Bernstein's law be applied in paternity proceedings and other cases of disputed parentage with the following reservation: In cases in which the supposed parent belongs to group AB and the child to group O, or vice versa, it should be stated merely that parentage is extremely unlikely or that parentage is excluded with a high probability, bordering on certainty.

A number of suggestions have been offered to account for the exception reported by Haselhorst and Lauer. Levine attempted to explain it on a genetic basis, attributing the phenomenon to nondisjunction.[2] Another possible explanation, perhaps, is a serologic one. Thus, Lauer reports that the mother in his case belonged to subgroup A_2B. Hence the child, if it belonged to group A, would have to belong to the more weakly reacting subgroup A_2, unless the father belonged to subgroup A_1 or A_1B.

Application of the Properties M and N in Cases of Disputed Parentage.—As Landsteiner and Levine have demonstrated, the three M-N types are transmitted by means of two allelomorphic genes, M and N (table 4). Under this theory it is evident that bloods lacking both properties M and N should not exist. The fact that, in tests performed up to the present time on almost 50,000 specimens of blood by various workers in the field, not one individual was found lacking both M and N is strong evidence in support of this theory.

TABLE 3.—*The Blood Groups in Parents and Children*

	Groups of Parents	Groups of Children Possible	Groups of Children Not Possible
1.	O × O	O	A, B, AB
2.	O × A	O, A	B, AB
3.	O × B	O, B	A, AB
4.	A × A	O, A	B, AB
5.	A × B	O, A, B, AB	None
6.	B × B	O, B	A, AB
7.	O × AB	A, B	O, AB
8.	A × AB	A, B, AB	O
9.	B × AB	A, B, AB	O
10.	AB × AB	A, B, AB	O

TABLE 4.—*Mechanism of Transmission of the M-N Types*

Phenotype	Genotype
Type M	MM
Type N	NN
Type MN	MN

From this theory it can easily be predicted to what types the children must belong if the types of the parents are known (table 5). Table 5 can be summarized in two laws of heredity: 1. The agglutinogens M and N cannot appear in the blood of a child unless present in the blood of one or both parents. 2. A type M parent cannot have a type N child, and a type N parent cannot have a type M child, regardless of the type of the second parent.

These two laws of heredity have been tested by a number of independent investigators. In a series of well over 1,000 families with almost 3,000 children only eight apparent exceptions were found, each of which can be explained by illegitimacy. In addition, to rule out the possibility of illegitimacy, special studies on mothers and children have been made, and in a series of more than 7,000 such combinations examined up to the year 1935 not a single exception to the second law of heredity was found. Therefore the committee believes that the application of the M-N types in cases of disputed parentage can be recommended without qualification.

TABLE 5.—*Heredity of the Agglutinogens M and N*

Types of Parents	Per Cent of Children of Types		
	MN	M	N
MN × MN	50	25	25
MN × N	50	0	50
MN × M	50	50	0
M × N	100	0	0
M × M	0	100	0
N × N	0	0	100

The subgroups of groups A and AB have also been found to be hereditary and a plausible theory to explain the method of transmission has been proposed. However, there have been apparent exceptions to

1. Allelomorphic genes determine differences in particular characteristics and are situated on corresponding loci of a homologous pair of chromosomes.

2. When in the reduction division any pair of homologous chromosomes fails to separate, this is known as "nondisjunction."

the theory in the few reports published up to now. Moreover, the technic of determining the subgroups offers certain difficulties. Therefore the committee feels that the application of the subgroups of A and AB in cases of disputed parentage is not established well enough to be used at the present time as a routine procedure.

THE BLOOD TESTS IN THE COURTS

The classic blood group tests have been applied in European countries since 1924 in cases of disputed parentage, and as early as 1929 Schiff was able to compile a series of more than 6,000 cases in which the tests had been used in paternity proceedings (table 6). Incidentally, it is of interest to point out that when

TABLE 6.—*Blood Group Tests in European Courts Before 1930 (After Levine*)*

Country	Number of Cases	Paternity Exclusions	Exclusion Percentage
Germany (Schiff)	4,519	353	7.8
Austria (Werkgartner)	700	63	9.0
Danzig (Puschel)	600	39	6.5
Denmark (Sand)	50	6	12.0
Denmark (Thomsen)	500	64	12.8
Sweden (Wolff)	259	17	6.6
Norway, Switzerland, Lithuania (cited by Schiff)	37	4	10.8
Totals	6,665	546	8.2

* Am. J. Police Sc. **3**: 157, 1932 (modified after F. Schiff).

the Bernstein theory is applied in paternity disputes, the chance of excluding an innocent man is approximately one out of six. Since 8.2 per cent of exclusions were obtained on the average (table 6), 8.2 × 6, or 49.2 per cent, that is, almost half of the men who denied the charge of parentage, were actually innocent of it.

In countries other than those listed in the table, blood group tests were applied only sporadically until recently. In 1930 the subject received considerable publicity in the United States, when the tests served to solve a hospital case in which two infants were accidentally interchanged before being taken home from a maternity hospital in Chicago. In 1933 the tests came to the fore again in this country, when a falsely accused man was exonerated in Connecticut. In 1934 a similar case occurred in Pennsylvania. In that year impetus was given to the subject in this country by a decision rendered by Justice Meier Steinbrink of the Supreme Court of New York State granting an application for a blood grouping test in a case of disputed paternity. His enlightened decision was reversed, however, by the Appellate Division on the ground that there was no statutory authority for the order. This defect was almost immediately remedied, when laws were enacted in 1935 authorizing courts in New York State to order blood grouping tests in cases of disputed parentage and in civil suits where relevant to issues, and to receive the results in evidence. Shortly thereafter similar laws were enacted in Wisconsin, and there are now bills pending before the legislatures of Montana, California and New Jersey.

It is common knowledge that the tests are of value only to exclude and not to prove parentage. Objection has been raised that if the tests failed to exclude an accused man they might serve unduly to prejudice the judge and more particularly the jury against him. With that in mind, the drafters of the Wisconsin law inserted a provision which prohibits the introduction of the results of the blood tests in evidence except when they exclude the man accused. In 1936 the New York State laws were amended by the inclusion of similar provisions.

It has been impossible to obtain accurate statistics of the number of cases in which blood group tests have been performed for courts here and abroad. All that can be done is to summarize the reports that have appeared in the medical literature. In table 6 is presented a survey of the tests performed up to 1930, and in table 7 is given a summary of the reports that have appeared since the application of the properties M and N has been introduced in paternity proceedings. It will be seen that the chance of excluding paternity has almost been doubled by the M-N tests.

The data given in tables 6 and 7 concerning blood tests in Austria may be supplemented by the following information, which was forwarded to us by Dr. Josef Franz Holzer in response to a questionnaire sent to him. Dr. Holzer informs us that blood grouping was first introduced in civil and criminal courts of Austria in cases of disputed parentage as early as 1926 in Vienna and Graz, and in 1927 in Innsbruck also. The M-N tests were introduced in Innsbruck in 1932 and in Vienna in November 1933. Since 1930 the blood tests have been used in almost every paternity case at least in Vienna, and there the number of tests performed number many thousands. In Graz during the period 1926-1936 there were 1,250 paternity cases in which the tests for A and B were used, in 418 of which typing for M and N was also performed. In Innsbruck the cases number from forty to fifty every year.

It may be of interest to note that in certain countries the tests are rarely if ever used, no legal provisions having been made for their application. In Italy, for example, paternity research is forbidden except in cases of rape. In a personal communication for Leone Lattes, the most prominent authority on the subject in that country, he states that his experience includes only a few private cases and that he does not know of any case before their courts in which the M-N tests have been used.

In this country the majority of the tests performed for the courts have been done in New York State, as a result of the legislation adopted there. In table 8 is given a list of cases in which blood tests have been made in this country based on the experience of one of the writers (W.) and such reports as could be collected from the literature and by questionnaires. In every case, except the two given below in which the blood tests excluded a certain individual as the parent of a child, the courts accepted the conclusions as final. In one case (reported by Heise), which was tried before a jury, the man was found guilty despite the results of the blood test, because of fancied resemblance between the father of the accused man and the infant. The judge, however, set the verdict aside as being against the weight of evidence and granted a new trial. It is significant that the woman never proceeded with the new trial for the reason that, despite the fact that she and the accused man were both white, the child's features took on definite negroid characteristics as it grew older. In the second case,

TABLE 7.—*Published Reports on the Use of Blood Groups and M-N Tests in European Courts Since 1930*

Investigator	Country	Number of Cases	Number of Exclusions: By Tests for A & B	By Tests for M & N	Totals*	Per Cent Exclusions
Schiff, F.: Deutsche Ztschr. f. d. ges. gerichtl. Med. **21**: 404, 1933	Germany	911	69	82	139	14.7
Wolff, E., and Jonsson, B.: Acta pathol. et microbiol. Scand. **12**: 131, 1935	Sweden	600	36	38	69	11.5
Clausen, J.: Ztschr. f. Hassenphysiol **4**: 420, 1934	Denmark	119	12	15	25	21.0
Routil, R.: Mitt. d. Anthropol. Gesellsch. in Wien **65**: 233, 1935	Austria	129	11	10	21	16.3
Püschel, S.: Ztschr. f. Immunitätsforsch. **81**: 445, 1934	Danzig	156	17	17	32	20.5
Hirszfeld, L.: Personal communication	Poland	180	9	7	13	7.2

* Figures in this column are less than the sum of the two preceding columns since, naturally, there are cases of exclusions made by both methods.

now pending on appeal before the District Court of Appeals of California, the trial court decided against the accused man, 70 years old and impotent, despite the fact that the blood tests exonerated him. On the other hand, several courts in the United States have rendered rather exhaustive and learned opinions favoring the blood tests, of which a few may be cited:

Buschel v. *Manowitz* 271 N. Y. Supp., 277.
Matter of Swahn 285 N. Y. Supp., 234.
State v. *Damm* 266 N. W. 667, 104 A. L. R. 430.
State v. *Willing* 6 Ohio Opinions 371.

In a number of jurisdictions the courts have ordered blood grouping tests even though there was no statute authorizing them to do so. In other jurisdictions the courts require statutory authority to order blood tests or to receive them in evidence, and the lack of proper legislation has hindered a more widespread application of the blood tests.

The committee is of the opinion that such laws should be passed in those states in which they are still required to promote the use of the tests. That such laws should be properly worded and sufficiently explicit is of considerable importance, and hence the following bill now pending before the legislature of California is cited as a model:

An act to add section 1872 to Code of Civil Procedure, relating to blood grouping tests.

The people of the State of California do enact as follows:

SECTION 1. Section 1872 is hereby added to the Code of Civil Procedure to read as follows:

1872. Wherever it shall be relevant to the prosecution or defense of an action, the court, by order, shall direct any party to the action and the child of any such party and the person involved in the controversy to submit to one or more blood grouping tests, the specimens for the purpose to be collected and the tests to be made by duly qualified physicians and under restrictions and directions, as to the court or judge shall seem proper. Whenever such test is ordered and made, the results thereof shall be receivable in evidence only where definite exclusion shall be established. The order for such blood grouping tests may also direct that the testimony of such experts and of the persons so examined may be taken by deposition.

TABLE 8.—*Blood Group and M-N Tests in the Courts of the United States*

Investigator	State	Court	Number of Cases	Number of Exclusions: By Tests for A & B	By Tests for M & N	Totals	Per Cent Exclusions
Hyman, H., and Snyder, L. H.: Ohio State Law J. **2**: 203, 1936	Ohio	Court of Common Pleas, Court of Domestic Relations of various counties	10	2	0	2	
Wiener, A. S.: U. S. Law Review **70**: 683, 1936...	New York	Special Sessions N. Y. C. (1935-1936)	115	8	5	13	11.5
	New York	Various courts *†	46	2	4†	6	13.0
Heise, H. A.: Am. J. Clin. Path. **4**: 400, 1934....	Pennsylvania	.....	1‡	1			
Hammack, R. W.: Personal communication from lawyer for defendant	California	District Court of Appeals, 2d Appellate District	1‡	1			
Wiener, A. S.: Am. J. M. Sc. **186**: 257, 1933.....	Connecticut	Court of Common Pleas, New Haven	2	1	0		
Vaughan, S. L.: Personal communication.....	New York	Children's Court, Buffalo; Supreme Court, Buffalo	20‡	1	1	2	

*† Domestic Relations Court, Family Court, Children's Court, Supreme Court, in various cities of New York State; also a few private cases. In certain of these cases, more than one man was involved; in others more than one child.
† In one of these cases the supposed mother was proved not to be the real mother.
‡ M-N tests not used.

TECHNIC

The persons who perform blood tests for the courts, if properly qualified, will be fully aware of the pitfalls in the technic and able to avoid them. However, it is deemed advisable to set down certain minimum requirements for the purpose of guiding the expert in rendering his report. The report to the court should consist not only of the statement of the expert's observations and interpretation but also of a brief outline of the method that has been used.

With regard to the four blood group tests, it is important to make an allowance for individual variations in the sensitivity of the red blood cells, particularly in group A and AB, in which there are two or possibly even three sorts of A agglutinogens. The receptor A_3 may be very weak in the new-born, and in subgroup A_2B may be somewhat difficult to detect even in adults. Hence it is important to be certain that the testing serums used are of highest titer. The potency of the serums should be controlled not only when they are put up in vials to be stored but also at the time of the actual test. Furthermore, controls should be made with known blood suspensions of group O and B and subgroups A_1 and A_2 in the tests. As an additional check on the results, the serum of the individuals examined must be tested against blood suspensions of known groups O, A_1, A_2 and B. This is necessary especially in order to detect rare instances of blood $A_2B\alpha_1$ which might be taken for blood of group $B\alpha$.

Control tests with serum are of little value in infants, but the group can almost invariably be determined by testing the blood cells alone. In cases in which there is any doubt in the mind of the examiner, the child should be reexamined at a later date when the agglutinins have appeared in the plasma. In general it may be advised that infants should not be examined until they are at least 1 month old.

With regard to the M-N tests, attention should be given to using only the most potent testing fluids, especially for property N, because of the existence of weakly reacting bloods. In general, the testing fluids used should have a minimum titer of 10 to 20. Control blood suspensions of known types M, N and MN must always be included when performing the tests. At least two, preferably three, different testing fluids of each kind should be used.

If the reactions are not clean cut, the tests should be repeated on fresh specimens of blood. If doubt continues to exist, it is essential to state that no definite conclusion can be reached.

Proper identification must be made of the individuals who present themselves for the examinations by their finger prints, signatures or photographs, or by the plaintiff. These precautions are necessary, as is evidenced by the case reported in Europe in which a man sent one of his friends as his substitute; fortunately the attempted fraud was discovered in time.

Although it may seem from the foregoing that the blood grouping tests for determining parentage are complicated and fraught with difficulty, one should not obtain the impression that with proper organization the method cannot be used safely. This is shown by the experience in European courts, where the method is now firmly established.

QUALIFICATION OF EXPERTS

The qualification of experts may be said to be the most important problem not only as far as blood group tests are concerned but with regard to experts in general. At the present time the expert states his qualifications to the court, which passes judgment on them. But cognizance ought to be taken of the fact that a man who is a preeminent authority in toxicology does not necessarily qualify as a serologist. Since courts may not be in a position to evaluate the special equipment of experts, the committee believes that this entire question should be reviewed and that the authority to qualify medical witnesses should not rest with the court but with some authorized medical body such as the American Medical Association.

It has often been stated, not without some justification, that one can obtain as many experts on one side of the question as on the other. This should be possible only when a question of opinion is involved. When there is a question of fact, as with the results of the blood grouping tests in a case of disputed parentage, there can be only one conclusion rendered by any number of experts in any one case, unless they are not properly qualified and have committed an error in technic, as has actually occurred in Europe (Lauer).

What can happen when untrained persons perform blood group tests for the court was recently demonstrated by two cases in a court in New York City, in which erroneous reports were submitted. In one, the expert stated that the accused man

could not be the father, since he belonged to group O and the child to group A. When the absurdity of his conclusion was pointed out to him, he excused himself by saying that he had "forgotten" to test the mother's blood. In the second case the expert stated that a certain man had been falsely accused, since he belonged to group B, the mother to group O, and the child to group A. Reexamiation of the blood specimen by one of us (W.) revealed that the accused man actually belonged to group AB (subgroup A_2B with an atypical α_1 agglutinin).

EXAMINATION OF BLOOD STAINS IN FORENSIC CASES

As the examination of blood stains in forensic cases is a more difficult problem, it will not be gone into in detail in the present report. With very fresh blood, from which suspensions can be prepared, the tests for all groups and types can be done in the usual manner, which makes possible, in all, the differentiation of eighteen distinct classes of human blood. With dried blood stains, a much more difficult technic is required, and the investigator is restricted to the determination only of the four blood groups and the presence or absence of M, since with dried blood the determination of the property N and of the subgroups of A and AB is as yet unreliable. In performing absorption tests on blood stains for the agglutinogens A and B, a point to be stressed is the inclusion of tests of unstained material as a control.

In practice, group determination of old blood stains has proved of only limited value. Putrefied or decomposed blood does not yield reliable results, and even with well preserved stains the material is often insufficient. The qualified investigator, however, will refrain from making any report at all unless the reactions he obtains are absolutely clear and decisive. For the examination of blood stains, particularly, it is essential to have well trained workers, since those not thoroughly familiar with the field seem to have a tendency to offer an opinion in every case although the results may not be conclusive.

To increase the value of group determination in criminal cases, the committee recommends that the proper authorities be advised that all blood stains, whether or not they seem to be of importance, be sent to the laboratory for examination at once, while they are still fresh, and that the results be filed for future reference. Moreover, since the determination of the group rapidly becomes more difficult after death, it is recommended that the determination of the group and M-N type should be made a routine part of the postmortem examination in all cases of violent or unexplained death, whether or not there is suspicion of murder at the time.

With regard to other stains, such as semen and saliva, the same general principles apply, but here the tests are limited to the determination of the four blood groups alone.

RECOMMENDATION

On the basis of the foregoing considerations, the committee recommends that, where necessary, laws should be passed which would authorize courts to order blood grouping tests in cases of disputed paternity, and to receive the results thereof in evidence. Such laws could be modeled after those which have been passed in New York State and Wisconsin and the laws now pending before the legislatures in California and New Jersey. It is also recommended that the question of the qualification of medical experts should be reviewed.

Respectfully submitted.

LUDVIG HEKTOEN, Chairman,
KARL LANDSTEINER.
ALEXANDER S. WIENER.

NEW BUSINESS

Resolutions on the Development of a National Health Program

Dr. Samuel J. Kopetzky, New York, presented the following resolutions, which were referred to the Reference Committee on Executive Session:

WHEREAS, The house of delegates of the Medical Society of the State of New York in annual session at Rochester, 1937, adopted certain resolutions which carried instruction to its delegation to the House of Delegates of the American Medical Association; and

WHEREAS, These resolutions concern the following principles and proposals anent the development of a national health program and the special circumstances under which the delivery of a high quality medical care to the American people may be evolved under conditions within the framework of adopted policy of the American Medical Association; and

WHEREAS, These principles and proposals are as follows:

PRINCIPLES

1. That the health of the people is a direct concern of government, and a national public health policy directed toward all groups of the population should be formulated.

(*a*) In the formulation of such policy the opinions and suggestions of organized medicine should be given preference.

(*b*) That the House of Delegates of the American Medical Association create a group which shall formulate the principles and proposals of a national health policy to be submitted to the government.

2. That adequate medical care is an essential element of public health and local, state and federal governments need to supplement present efforts of the medical profession to provide it.

(*a*) That the House of Delegates of the American Medical Association establish a working definition of the term "adequate medical care" suitable for the purpose of discussing national legislation and social legislation.

3. That the problem of economic need and the problem of providing adequate medical care are not identical and may require different approaches for their solution.

(*a*) Principle 3 implies that the problem of providing the individual with the means of securing medical care—that is, the economic needs—and the problem of distributing medical services are not identical; that these problems of economic needs should be approached separately from those of distributing medical services to the people.

PROPOSALS

1. That the first necessary step toward the realization of the above principles is to minimize the risk of illness by increasing preventive efforts through extension of public health services, federal, state and local.

(*a*) That the extension of federal, state and local preventive health measures is approved, provided it meets the needs of a given situation in the opinion of the medical profession in the locality affected and provided it integrates to the greatest possible extent the private practitioner of medicine in the development of preventive health services.

2. That the immediate problem is provision of adequate medical care for the medical indigent, the costs to be met from public funds.

3. That public funds should be made available for the support of medical education and for studies, investigations and procedures for maintaining the present high standards of medical practice. This support shall have the majority opinion of organized medicine to recommend it. If this is not provided for, the provision of adequate medical care may prove impossible.

4. That public funds should be available for medical research as essential for high standards of practice in both preventive and curative medicine.

5. That public funds should be made available to hospitals that render service to the medically indigent and for laboratory diagnostic and consultative services.

(*a*) With the provision that these consultative and laboratory diagnostic services shall be established only in regions where the medical profession approves the need for same and after consultation with the local medical profession in the area affected.

6. That in the allocation of public funds existing private institutions should be utilized to the largest possible extent and receive support as long as their service is in accord with the above proposals.

(*a*) That insofar as the allocation of funds is concerned for these institutions, they should not be made on a pro rata population basis but should be limited strictly by the needs of given institutions in specified localities and the allocation should have the approval of the medical profession in the locality in which the institutions are located.

(*b*) That in the selection of existing institutions to which public funds may be allocated their rating and their needs shall be measured by the standards of the Council on Medical Education and Hospitals of the American Medical Association; and that no public funds should be made available to existing institutions against and contrary to the majority opinion of the medical profession in the locality in which they exist.

7. That the investigation and planning of the measures proposed and their ultimate direction should be assigned to experts.

(*a*) It being recommended that the various subdivisions of the American Medical Association, namely, its national, state and county components, furnish to the government on request lists of experts in their communities to carry out these principles and proposals.

(*b*) That the word "expert" is taken to mean a man especially qualified by experience in his specific field. Nominations of these "experts" should be by units of organized medicine. The nominations and recommendations by organized medicine should be given preferential consideration by government in making its selection.

8. That the adequate administration and supervision of the health functions of the government, as implied in the above proposals necessitates, in our opinion, a functional consolidation of all federal health and medical activties under a separate department.

9. That we who subscribe to the above principles, proposals and recommendations hold the view that compulsory health insurance does not offer a satisfactory solution on the basis of these principles and proposals and repeat our objections to its enactment in this country; therefore be it

Resolved, That the House of Delegates of the American Medical Association endorses the principles, proposals and recommendations just cited; and be it further

Resolved, That the House of Delegates authorize the formation of a committee which shall, in conformity to the above, formulate a national health policy for submission to the government, and further be empowered to confer with government agencies and also with any other medical groups so that differences in conception, definition of terms and applicability of principles and procedures may be ironed out in conference regarding those matters in the above principles and proposals which are of national scope and to the end that they may be enacted.

Resolution on Socialization of Medicine

Dr. Harold T. Low, Colorado, announced the introduction of a resolution dealing with socialization of medicine, which was referred to the Reference Committee on Executive Session.

Resolutions on the Family Physician and the School Child

Dr. Burt R. Shurly, Section on Laryngology, Otology and Rhinology, presented the following resolutions, which were referred to the Reference Committee on Hygiene and Public Health:

WHEREAS, The family physician has labored for these many years without full recognition of his valuable services; and

WHEREAS, The various school systems of the United States depend on the family doctor for the prevention and diagnosis of disease and the protection of the public; therefore be it

Resolved, That the school boards and authorities in charge of the school systems all over our country be respectfully requested to enter and file on the index card of every school child the name and address of the chosen family doctor; and be it further

Resolved, That the designated family doctor, together with the parents or guardians of the child, be informed by the proper school authorities of any accident or illness that may befall the child in the schools of this country.

Resolution Requiring Physicians on Staffs of Accredited Hospitals to Be Members of the American Medical Association

Dr. John Z. Brown Sr., Utah, presented the following resolution, which was referred to the Reference Committee on Medical Education:

WHEREAS, It has been forcibly brought to our attention that some of the celebrated hospitals of the country have on their staffs doctors of medicine who are not members of their county medical societies; and

WHEREAS, This fact is not healthful to organized medicine and is detrimental to the doctor's reputation among his colleagues, and further that such nonaffiliation may interfere with a physician's application for license by reciprocity in another state; therefore be it

Resolved, That the Utah State Medical Association disapproves such condition and, through its house of delegates, requests the House of Delegates of the American Medical Association to take similar action and urge the Council on Medical Education and Hospitals to add to its requirements for approval that doctors on the staffs of accredited hospitals should be members of the American Medical Association.

Resolutions Recommending Establishment of Council on Medical Ethics and Economics

Dr. Carl F. Vohs, Missouri, presented the following resolutions from the Missouri State Medical Association, which were referred to the Board of Trustees:

WHEREAS, There are unmistakable indications that compulsory health insurance and other phases of state medicine are among the plans of our federal government; and

WHEREAS, The public and some members of the medical profession have not sufficient knowledge of the consequences of such services; and

WHEREAS, Adequate scientific medical treatment of the sick and afflicted is our first consideration; and

WHEREAS, Such projects involve the appointment of physicians and surgeons, which should be done in accordance with the recommendations of the American Medical Association; and

WHEREAS, The state association and ultimate county unit societies have demonstrated their inability properly to discipline their members; therefore be it

Resolved, That the American Medical Association shall establish a Council on Medical Ethics and Economics for a thorough study of the entire situation and everything which it might entail and give widespread publicity to all the phases of its activities; and be it further

Resolved, That the By-Laws and regulations of the American Medical Association be so amended that this Council on Medical Ethics and Economics may also investigate alleged unethical conduct which may be brought to its attention and prosecute the apparent violations before the Judicial Council of the Association for ultimate disposition as to innocence or guilt, with either exonerations or punishment; and be it also

Resolved, That our delegates be instructed to present this action to the House of Delegates of the American Medical Association at the Atlantic City session in June 1937.

Resolutions Requesting Change of Name of Section on Obstetrics, Gynecology and Abdominal Surgery

Dr. George Gray Ward, Section on Obstetrics, Gynecology and Abdominal Surgery, presented the following resolutions, which were referred to the Reference Committee on Sections and Section Work:

WHEREAS, The Council on Medical Education and Hospitals has recently recognized Obstetrics and Gynecology as a specialty; and

WHEREAS, The Scientific Assembly provides adequately for the discussion of problems of abdominal surgery within the Section on Surgery, General and Abdominal; therefore be it

Resolved, That the Section on Obstetrics, Gynecology and Abdominal Surgery request the House of Delegates to change the name of the section to the Section on Obstetrics and Gynecology; and be it further

Resolved, That the Section on Obstetrics, Gynecology and Abdominal Surgery instruct its delegate to present this resolution to the House of Delegates at its regular meeting in 1937.

Resolution on Review of Motion Picture Films

Dr. Thomas P. Farmer, New York, presented the following resolution, which was referred to the Board of Trustees:

WHEREAS, Motion picture films are being publicly offered gratis or on a rental basis, by organizations, commercial and noncommercial, for inclusion in programs of county medical societies, accompanied in some instances by speakers; and

WHEREAS, Some of these films carry advertising matter or objectionable propaganda; and

WHEREAS, These matters have been brought to the house of delegates of the Medical Society of the State of New York and there approved and the New York delegation instructed to present the following; therefore be it

Resolved, That the House of Delegates of the American Medical Association make provision through some suitable bureau or department of its central office to review these films, classify them and through THE JOURNAL publish information anent them to the end that members and officials of component organized units of the American Medical Association be fully informed regarding such films and have some measure of guidance in selecting them for inclusion on their local programs.

Resolution on Production of Educational Films

Dr. C. A. Dukes, California, presented the following resolution, whch was referred to the Board of Trustees:

WHEREAS, The public today is seeking and demanding dependable health information and knowledge; and

WHEREAS, This demand is being partly met by self-seeking, nonauthentic and nonscientific sources, namely, the advertisers and venders of remedies, and self-constituted, inadequately educated cults and charlatans; and

WHEREAS, Misleading and false information is being transmitted to the public through the various avenues of publicity which constitute a very definite menace to the health welfare of the public of this nation, and, therefore, demands the concerted action of organized medicine to aid and support the physician in fulfilling his duty to the public as expressed in sections 1 and 3, Chapter IV of the Principles of Medical Ethics of the American Medical Association; and

WHEREAS, Methods and channels through which educational information is being imparted have materially changed in the past twenty-five years from the written page to the radio, and now to the motion pictures with sound effect; and

WHEREAS, Motion pictures bringing the story of medicine to the public have been used in a very limited way by the profession and by organized medicine; and

WHEREAS, The visual story of medicine in film lends itself to dramatization of great general interest and offers effective means for desirable educational work in the public's behalf, and will create an appreciation of science of medicine and of those who represent it; and

WHEREAS, Motion picture films must be of understandable, pictorial and dramatic quality that calls for the expenditure of money for scenarial writing of scripts and dialogue; and

WHEREAS, Such monies cannot be expended by individual physicians or by component medical units; and

WHEREAS, Motion picture films of a character contemplated in this resolution should be used nationally to the benefit of the public; therefore be it

Resolved, That this House of Delegates requests the Board of Trustees to give serious and immediate consideration to the production of educational films, with and without sound track, and that such films be made available for the various component state and county medical societies throughout the country for these educational purposes.

Resolution on Importance of Preventive Medicine

Dr. Terry M. Townsend, New York, presented the following resolution from the Medical Society of the State of New York, which was referred to the Reference Committee on Hygiene and Public Health:

WHEREAS, The Medical Society of the State of New York in annual meeting assembled at Rochester, 1937, adopted recommendations made by its president and also resolutions originating in the Medical Society of the County of New York that during the ensuing year preventive

medicine be stressed by giving it a place on county and district branch programs and by featuring it in the *New York State Journal of Medicine* and also in addresses before lay groups wherever possible; and

WHEREAS, These recommendations were endorsed and approved by the house of delegates of the Medical Society of the State of New York and their presentation to the House of Delegates of the American Medical Association directed; therefore be it

Resolved, That the American Medical Association reiterates its stand on the importance of preventive medicine and urges on all component bodies that every effort be made to promote all features of preventive medicine, to make the same available to the public and so to feature the achievements of preventive medicine as to create a larger demand for it by the public.

Resolution on Program of Public Education

Dr. Fred Moore, Iowa, presented the following resolution from the Iowa State Medical Society, which was referred to the Board of Trustees:

WHEREAS, There is and will be continued interest on the part of the public in medical news and in various plans for provision for medical services to groups of people; and

WHEREAS, Much of the publicity of the past conveys little truth in the field of discovery and much that is misleading in the field of economics; and

WHEREAS, Much of the reaction and the attitude of the medical profession to said publicity is misunderstood by the public; and

WHEREAS, Education by publicity requires special experience and technics largely foreign to our profession; and

WHEREAS, The medical profession of this nation needs more adequate publicity and guidance in these respects; therefore be it

Resolved, By the House of Delegates of the American Medical Association that the Board of Trustees should employ additional and competent personnel to develop on a national scale a program of public education that will be designed to foster better understanding by the laity in the field of medical science and particularly better understanding by the public of its interests and the interests of the medical profession in the various sociologic and economic schemes and plans which involve provision of medical services.

Resolutions to Be Brought Up in Executive Session

Dr. W. Albert Cook, Oklahoma, submitted resolutions to be brought up in Executive Session, which were referred to the Reference Committee on Executive Session.

Resolutions from Medical Society of New Jersey

Dr. Walt P. Conaway, New Jersey, presented the following resolutions:

At the regular annual meeting of the house of delegates of the Medical Society of New Jersey on Wednesday afternoon, April 28, 1937, the following resolutions were introduced at the direction of the welfare committee and passed by the house:

RESOLUTION ON INVESTIGATION INTO CONDUCT OF MAGAZINE "HYGEIA"

The following resolution was referred to the Board of Trustees:

Resolved, That our delegates to the American Medical Association be instructed to introduce a resolution into the House of Delegates of the American Medical Association calling for an investigation into the conduct of the magazine *Hygeia*, particularly as to articles that prescribe for the laity, and into the methods employed by the business manager in circularizing the laity with literature designed at least to imply that Hygeia magazine will take the place of a medical adviser.

RESOLUTION ON OPPOSITION TO COPELAND FOOD AND DRUG BILL

The following resolution was referred to the Reference Committee on Legislation and Public Relations:

Resolved, That the Medical Society of New Jersey reaffirms the actions of this body of the past three years in opposition to the permissive and pernicious provisions of the Copeland Food and Drug Bill, and instructs its delegates to the approaching session of the American Medical Association to bend their efforts to develop a constructive program in the American Medical Association toward preservation of the Mandatory provisions and the distribution of responsibility of the Food and Drugs Law of 1906.

Resolutions on Clarifying Policy of the American Medical Association on Question of Group Hospitalization

Dr. C. W. Stone, Ohio, presented the following resolutions adopted by the house of delegates of the Ohio State Medical Association on April 29, 1937, which were referred to the Reference Committee on Medical Education:

WHEREAS, An increasing interest in group hospital payment plans has been demonstrated in recent months in several metropolitan centers of Ohio; and

WHEREAS, There are definite problems of direct interest to the medical profession involved in such projects; and

WHEREAS, The present policy of the Ohio State Medical Association, as established by official action of the council on Oct. 29, 1933, declares that medical service should not be included among services furnished under group hospitalization contracts; and

WHEREAS, Confusion and controversy exist with respect to a differentiation between medical services and hospital services in many group hospitalization programs; be it

Resolved, That the house of delegates of the Ohio State Medical Association this 29th day of April 1937, reaffirms the policy adopted by the council of this association on Oct. 29, 1933; and be it further

Resolved, That the house of delegates of this association respectfully requests the officials and House of Delegates of the American Medical Association to consider, at the forthcoming session of the American Medical Association at Atlantic City, the advisability of clarifying its policy on the question of group hospitalization, especially on the matter of defining and enumerating the services which should not be included because they are definitely medical services.

Resolutions on Presentation of Exhibit of the American Medical Association at San Francisco International Exposition

Dr. Elbridge J. Best, California, presented the following resolutions, which were referred to the Board of Trustees:

WHEREAS, The San Francisco International Exposition will be opened in February of 1939; and

WHEREAS, A special building will be constructed for education and science; and

WHEREAS, The Exposition management has requested the California Medical Association to appoint an advisory committee and to exercise censorship over all exhibits relating to medicine and public health; therefore be it

Resolved, That the Board of Trustees be requested to prepare a suitable exhibit representative of the American Medical Association; and be it

Resolved, That the Board of Trustees direct the Association's Director of Exhibits to cooperate with the advisory committee of the California Medical Association.

Proposed Amendments to the Principles of Medical Ethics

Dr. George Edward Follansbee, Chairman, Judicial Council, presented the following proposed amendments to the Principles of Medical Ethics, which were referred to the Reference Committee on Amendments to the Constitution and By-Laws:

Amend section 2 of article 6 of chapter III of the Principles of Medical Ethics so that only the first paragraph shall be included in that section under the heading "Conditions of Medical Practice," and that the remaining three paragraphs of that section shall be included under a section 3 with the heading "Contract Practice."

Amend the first paragraph of the new section 3 to read as follows:

SEC. 3.—By the term "contract practice" as applied to medicine is meant the carrying out of an agreement between a physician or a group of physicians, as principals or agents, and a corporation, organization or individual, to furnish partial or full medical services to a group or class of individuals on the basis of a fee schedule, or for a salary or a fixed rate per capita.

In accordance with the above proposed amendments, the present section 3, article VI, under the heading "Commissions," becomes section 4, and the present section 4 under the heading "Direct Profit to Lay Groups," becomes section 5.

Proposed Amendments to the By-Laws

Dr. George Edward Follansbee, Chairman, Judicial Council, presented the following proposed amendments to the By-Laws, which were referred to the Reference Committee on Amendments to the Constitution and By-Laws:

PROPOSED AMENDMENT TO CHAPTER XI, SECTION I

WHEREAS, It is undesirable to carry on the membership roll and in the directory of physicians the names of members convicted of felonies; be it

Resolved, That the By-Laws, chapter XI, section 1, be amended by adding after the first sentence: "Conviction of a felony shall automatically remove a member's name from the membership roll for a period of not less than one year after the termination of punishment for the offense."

PROPOSED AMENDMENT TO CHAPTER IX, SECTION I

Amend chapter IX, section 1, of the By-Laws by adding to the second paragraph the following sentence: "The period of time within which appeal to the Judicial Council may be taken shall be limited to the six months following the date of decision by the constituted authority of a constituent association."

PROPOSED AMENDMENTS TO CHAPTER IV, SECTIONS 1 AND 8

Amend chapter IV, section 1, last sentence to read "No member of the House of Delegates nor general officer of the Association shall be eligible for election to the office of President-Elect or Vice President."

Amend chapter IV, section 8, to read, "INSTALLATION AS PRESIDENT.—The President-Elect shall be installed as and assume the duties of President at the opening general meeting of the Scientific Assembly of the annual session following that at which he was elected."

Proposed Amendment to the Constitution

Dr. George Edward Follansbee, Chairman, Judicial Council, presented the following resolution proposing an amendment to the Constitution, article 6, section 2, which the Speaker declared may be acted on at the next annual session:

WHEREAS, The Constitution and the By-Laws refer to the election annually of a president and president-elect when in fact only a president-elect is elected; and

WHEREAS, No provision is made in the Constitution and By-Laws for a succession in office in case of death or disability of the President-Elect; be it

Resolved, That article 6, section 2, of the Constitution be amended to read, "(*a*) The President-Elect shall be elected annually. He shall serve as President-Elect until the annual session of the Association next ensuing after his election and shall become President on his installation in the course of that session, serving thereafter as President until the next following annual session and the installation of his successor. If the President-Elect dies, resigns, or in the judgment of the Board of Trustees confirmed by the House of Delegates is permanently disqualified for the performance of the duties of his office by any just cause, the Vice President shall become President-Elect and in due course succeed to the presidency, with all of the prerogatives and duties pertaining to that office, as fully as if elected to it in the first instance: Provided, however, that the President-Elect who is elected at the annual session of the Association in 1937 shall, notwithstanding his election as such for the period of one year only, be installed as President in the course of the session in 1938 and continue as such until the session in 1939 and the installation of his successor.

(*b*) A Vice President, a Secretary, a Treasurer, and a Speaker and a Vice Speaker of the House of Delegates shall be elected, each to serve for one year and until his successor is elected and installed: Provided, however, that in event of the death, resignation or removal, or of the permanent disability of the President-Elect as determined by the Board of Trustees, the Vice President shall succeed to the office of President-Elect and in due course to the office of President, notwithstanding the fact that he was in the first instance elected as Vice President for one year only."

Resolution Requesting the North Central Association of Colleges to Amend Its Manual

Dr. T. R. K. Gruber, Michigan, on behalf of the Michigan State Medical Society, presented the following resolution, which was referred to the Reference Committee on Medical Education:

WHEREAS, It appears from perusal of the manual of the North Central Association of Colleges and Secondary Schools, which manual sets forth the requirements for approval under section 48 of the manual, Health Service; and

WHEREAS, The requirements mentioned above are broad and far reaching, and, in fact, set up for the use of the student body what is closely akin to state medicine; and

WHEREAS, The student body being in their formative years are being taught to utilize this type of service; and

WHEREAS, This service destroys the patient-physician relationship; and

WHEREAS, The principles set forth are already in variance with the ideas of the proper practice of medicine as set forth by the American Medical Association; be it therefore

Resolved, That the North Central Association of Colleges and Secondary Schools be requested to delete this requirement from their manual and allow each school to set up an individual service for the school, said service to be planned and executed in conjunction and with the approval of the local county medical society.

Resolution on Establishment of a Department of Public Relations

Dr. L. J. Hirschman, Michigan, in behalf of the Michigan State Medical Society, presented the following resolution, which was referred to the Reference Committee on Legislation and Public Relations:

WHEREAS, The Congress of the United States and many state legislatures throughout the country are being prevailed on to enact systems of compulsory health insurance; and

WHEREAS, The general public is not fully aware of the deleterious effects such experiments would have on the quality of medical care, nor of the resulting economic burdens; and

WHEREAS, It is of vital concern to all persons that a complete and correct picture of the situation be immediately and universally publicized; therefore be it

Resolved, That the Michigan State Medical Society recommends that the American Medical Association consider the establishment of a Department of Public Relations whose function it shall be to engage the most expert and talented professional public relations counsel available, this Department of Public Relations to be equipped with adequate financial resources to carry on a permanent campaign of publicity and educational announcements through the most effective mediums to reach the masses of public opinion and set forth dramatically and accurately the story of medical progress and service in the United States.

Resolution on Administration of Anesthesia

Dr. Walter A. Lane, Massachusetts, presented the following resolution, which was referred to the Reference Committee on Legislation and Public Relations:

Resolved, That the employment of nurses, technicians and lay individuals, excepting those registered in the active pursuit of a medical degree, as anesthetists or for the parenteral administration of drugs or serums is an encroachment on the field of medical practice, is basically illegal, unethical and should not be tolerated in the best interests of the patient.

Amendments to Constitution and By-Laws

Dr. George Edward Follansbee, Chairman, Judicial Council, resubmitted proposed amendments to the Constitution and By-Laws, approved but not adopted by the House of Delegates at the Kansas City session in 1936, which were referred to the Reference Committee on Amendments to the Constitution and By-Laws.

The meeting recessed at 1:50 p. m. to reconvene Tuesday morning, June 8, at 9:30.

(To be continued)

REGISTRATION AT ATLANTIC CITY

The total registration at the Atlantic City session was 9,764. Below are given two summaries—one by sections and one by states:

Registration by Sections

Practice of Medicine	3,156
Surgery, General and Abdominal	1,325
Obstetrics, Gynecology and Abdominal Surgery	666
Ophthalmology	475
Laryngology, Otology and Rhinology	414
Pediatrics	536
Pharmacology and Therapeutics	52
Pathology and Physiology	275
Nervous and Mental Diseases	275
Dermatology and Syphilology	355
Preventive and Industrial Medicine and Public Health	211
Urology	314
Orthopedic Surgery	329
Gastro-Enterology and Proctology	391
Radiology	400
Miscellaneous Topics	41
Two or more sections or no section marked	549
Total	9,764

Registration by States

Alabama	46	New Hampshire	22
Arizona	16	New Jersey	1,184
Arkansas	24	New Mexico	3
California	151	New York	1,930
Colorado	51	North Carolina	133
Connecticut	204	North Dakota	10
Delaware	76	Ohio	438
District of Columbia	279	Oklahoma	39
Florida	60	Oregon	16
Georgia	76	Pennsylvania	2,373
Idaho	4	Rhode Island	44
Illinois	399	South Carolina	58
Indiana	126	South Dakota	7
Iowa	55	Tennessee	47
Kansas	29	Texas	99
Kentucky	65	Utah	5
Louisiana	47	Vermont	26
Maine	26	Virginia	180
Maryland	278	Washington	33
Massachusetts	352	West Virginia	90
Michigan	198	Wisconsin	82
Minnesota	102	Wyoming	1
Mississippi	11	Miscellaneous	117
Missouri	109		
Montana	5	Total	9,764
Nebraska	38		

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CONNECTICUT

Changes in the Faculty at Yale.—Dr. Leonard Greenburg, New York, executive director of the department of industrial hygiene, New York State Department of Labor, and associate clinical professor of public health, Yale University School of Medicine, New Haven, has been promoted to professor of public health. Other promotions include:

Dr. Daniel C. Darrow, associate professor of pediatrics.
Dr. Edwin F. Gildea, associate professor of psychiatry.
Dr. Howard S. Colwell, associate professor of medicine.
Dr. Hugh M. Wilson, associate professor of radiology.
Dr. Ralph H. Jenkins, associate professor of urology.
Dr. John H. Bumstead, assistant professor of medicine.
Dr. Harry E. Klebanoff, assistant professor of medicine.
Dr. Bernhard A. Rogowski, assistant professor of neurology.
Dr. Louis S. Goodman, assistant professor of pharmacology and toxicology.
Dr. Paul H. Lavietes, assistant professor of medicine.
Ralph G. Meader, Ph.D., assistant professor of anatomy.
Dr. Herman Yannet, assistant professor of pediatrics.

DISTRICT OF COLUMBIA

New Prize Awarded to Dr. Dowling.—The Washington Medical and Surgical Society awarded its newly established merit prize in medicine, May 22, to Dr. Harry F. Dowling, director of laboratories, George Washington University Hospital, for research on pneumonia, it is reported. The prize was established in honor of Dr. Frank E. Gibson, permanent treasurer of the society, and will be presented each year to "an outstanding figure in medicine in the city." Dr. Dowling is 32 years of age and a graduate of the George Washington University School of Medicine, class of 1931. Dr. Gibson also graduated from George Washington. He is 64 years of age. The award was presented to Dr. Dowling by Dr. Tomas Cajigas, formerly president of the society.

Society News.—At a meeting of the section on ophthalmology and otolaryngology of the Medical Society of the District of Columbia, April 16, the speakers were Drs. Eldridge S. Adams on "Present Status of Aviation Medicine in China"; Mervin C. Myerson, New York, "Petrositis," and Earle G. Breeding and Herbert H. Schoenfeld, "Report of Case of Petrositis with Recovery." In the afternoon, Dr. Myerson gave cadaver demonstrations of various operations for petrositis at Georgetown University School of Medicine.——A symposium on cataract was presented before the Washington Ophthalmological Society, May 31, by Drs. Clyde A. Clapp, Baltimore; Edmund B. Spaeth, Philadelphia; Conrad Berens, New York; Robert Von der Heydt, Chicago, and Lieut. Col. James E. Ash, of the Army Medical Museum.

GEORGIA

University News.—Dr. George W. McCoy, medical director, U. S. Public Health Service, Washington, D. C., addressed the Dugas Journal Club of the University of Georgia School of Medicine, May 17, on "Relationship of Epidemiology to Public Health."

Health Department Activities.—A silver goblet was presented to Dr. Hugo Robinson, who recently retired as health commissioner of Dougherty County, at a meeting of the board of health in Albany, May 6. He had held the office since 1920. The new health officer is Dr. Thomas W. Collier, College Park.—— Dr. William C. Humphries has resigned as health officer of the city of Griffin and Spalding County and will return to his home in Acworth, it is reported.

ILLINOIS

Hospital News.—The new wing of the Moline Public Hospital was dedicated recently. The Rock Island County Medical Society held its meeting in the new building May 11, and Dr. Frederick M. F. Meixner, Peoria, spoke on "Treatment of Pneumonia."

Memorial Services for Dr. Gahagan.—An oil portrait of the late Dr. Henry J. Gahagan was presented to the Mercyville Sanatorium, Aurora, during memorial services in his honor May 2. Dr. Gahagan was director of the sanatorium from 1917 until his accidental death Nov. 9, 1936.

Chicago

Campaign Against Illegal Practitioners.—The Illinois State Department of Registration, in its current campaign against illegal practitioners, reports the following disposition of cases:

Louis Marinakos, 1209 South Cicero Avenue, Cicero, Ill., pleaded guilty, May 14, and was fined $100 and costs.
M. Koltunski, 1032 North Ashland Avenue, found guilty, May 19, and fined $100 and costs and placed on six months probation.
F. W. Ackerman, 4026 North Kimball Avenue and 4009 Bernard Street, acquitted by a jury May 17.
Otto C. Mollnhauer, 3440 West Fullerton Avenue, found guilty, June 2, and fined $100 and costs and placed on one year's probation.
J. E. Bradley, Aero Laboratories, 1549 North Western Avenue, found guilty, May 24, and sentenced to thirty days in the county jail.

IOWA

Society News.—At a meeting of the Des Moines Academy of Medicine and the Polk County Medical Society in Des Moines, recently, Dr. Lewis M. Overton spoke on "Chronic Low Back Pain from the Orthopedic Viewpoint" and Dr. Charles Harlan Johnston, "Combined Ligation and Injection Treatment of the Varicosed Great Saphenous Vein." Drs. Harold C. Black and Lester D. Powell addressed the meeting, May 25, on arthritis and regional ileitis, respectively.—— Dr. Harris P. Mosher, Boston, will discuss "Modern Views of the Esophagus" before the Linn County Medical Society, June 29, in Cedar Rapids.

Public Health Meeting.—The Iowa Public Health Association held its eleventh annual meeting in Des Moines, May 20-21. The speakers included Drs. Walter L. Bierring, Des Moines, state health commissioner, "Extension of Health Services Through State, Local and Federal Resources"; Everett D. Plass, Iowa City, "Syphilis in Relation to Pregnancy," and Philip C. Jeans, Iowa City, "Management of Congenital Syphilis." A symposium on convalescent serum was presented by Drs. Carl F. Jordan, Paul Stephen and Lee F. Hill, all of Des Moines, and Jack V. Treynor, Council Bluffs. Dr. William Woodburn, health officer of Boone, was chosen president of the society.

LOUISIANA

State Pediatric Meeting.—Dr. Clarence H. Webb, Shreveport, was elected president of the Louisiana State Pediatric Society at its annual meeting in Monroe, April 26. Dr. Ralph J. Talbot, Monroe, was elected vice president and Dr. Ruth G. Aleman, New Orleans, reelected secretary-treasurer. At the banquet Dr. Edwin A. Socola, New Orleans, retiring president, gave an address on "The Peril of School Children from Moral Degenerates"; other speakers were Drs. Charles J. Bloom, New Orleans, on "Evaluation of Teeth in Their Relation to Pediatrics" and Stanley George Wolfe, Shreveport, "Vaccination Against Smallpox with Rivers' Cultured Virus."

New Professors in the Graduate School of Medicine.—Dr. Valentine H. Fuchs, New Orleans, has been appointed professor of otorhinolaryngology and director of the department in the Graduate School of Medicine of the Louisiana State University Medical Center, according to the Orleans Parish Medical Society *Bulletin*. The appointment of Dr. Henry W. E. Walther, New Orleans, as professor and head of the department of urology was also announced. Dr. Fuchs is 42 years of age. He graduated from Tulane University of Louisiana School of Medicine, New Orleans, in 1917. Dr. Walther, who is 49 years of age, graduated from the same school in 1910.

MARYLAND

University News.—Dr. Madge Thurlow Macklin, professor of histology and embryology, University of Western Ontario Medical School, London, gave the Catherine Milligan McLane Lecture at Goucher College, Baltimore, April 15; her subject was "The Inheritance of Disease and Its Relation to the Practice of Medicine."

Portrait of Dr. Winslow.—A portrait of the late Dr. Randolph Winslow, Baltimore, was presented by the Winslow family to the Medical and Chirurgical Faculty of Maryland during its recent annual meeting in Baltimore. Dr. Thomas S. Cullen made the presentation on behalf of the family. Dr. Winslow was president of the faculty in 1914. He served as a member of the House of Delegates of the American Medical Association in 1905-1906, 1911, 1913, 1916-1923, 1927-1934, and of the Judicial Council from 1915 to 1922. He was a founder of the American College of Surgeons and served at one time as president of the Baltimore City Medical Society and the Southern Surgical Association. He graduated from the University of Maryland School of Medicine and was for many years a mem-

ber of its faculty, where at the time of his death, February 27, he was emeritus professor of surgery. He once taught at the Woman's Medical College, Baltimore.

MASSACHUSETTS

Dr. Anderson Goes to University of Minnesota.—Dr. Gaylord W. Anderson, director of the division of communicable diseases, Boston, has been appointed professor and head of the department of preventive medicine and public health of the University of Minnesota School of Medicine, Minneapolis. He succeeds Dr. Kenneth F. Maxcy, who resigned to become professor of bacteriology at Johns Hopkins University School of Medicine, Baltimore. Dr. Anderson graduated from Harvard University Medical School in 1928.

MICHIGAN

Society News.—The Jackson County Medical Society was addressed in Jackson, May 18, by Dr. Raymond W. Waggoner, Ann Arbor, on epilepsy.——At a meeting of the Ingham County Medical Society, Lansing, May 18, Dr. Louis M. Warfield, Milwaukee, spoke on "Nature and Treatment of Peripheral Circulatory Collapse."——Dr. Frederick G. Novy, Ann Arbor, addressed the Wayne County Medical Society, Detroit, May 17, on "Fifty Years in Retrospect." He was presented with a certificate of honorary membership during the meeting.——Dr. Clifford H. Keene discussed "Experiences with Prontosil and Prontylin at the University Hospital, Ann Arbor" before the Oakland County Medical Society, June 2.

Principal Causes of Death.—Ten major causes of deaths accounted for 70 per cent of the 54,777 deaths recorded in Michigan in 1936, it is reported. Heart disease led the list with a total of 10,010 deaths, an increase over the 9,606 deaths reported in 1935. Cancer occupied second place with a total of 5,543 deaths in 1936 as compared with 5,191 in 1935. Deaths by violence moved into third place, the report stated, 5,246 deaths being attributed to this cause. This total includes 1,009 deaths ascribed to heat prostration and 1,913 deaths to automobile accidents. Other leading causes of death, as they appear in the state department of health's report, are as follows: Cerebral hemorrhage, with a total of 4,175 deaths, the only major cause of death to show a decrease from 1935 figures; pneumonia, 4,096 as compared with 3,802 in 1935; nephritis, 3,038; angina and coronary disease, 2,888; tuberculosis, 2,102 deaths, an increase of fifty-eight over 1935; premature birth, 1,395, and diabetes, 1,266.

MINNESOTA

Warning Against Unlawfully Prescribing Liquor.—The Liquor Control Commissioner of Minnesota called the attention of the Minnesota State Board of Medical Examiners to violations of the state liquor control act by physicians, particularly in the twenty-eight dry counties of the state. An investigation, conducted jointly by the commissioner and the medical board, disclosed a practice among certain physicians and druggists whereby the physicians issued, with or without remuneration, hundreds of prescriptions to be used at the convenience of druggists in the sale of alcoholic liquor. Some of the prescriptions were written in blank and merely signed by the physician. Others, although calling for whisky, failed to specify the name of the person for whom they were intended. February 6, as a result of the investigation, four Minnesota physicians were reprimanded by the medical board after a hearing before that body. The medical board has issued a warning to the medical profession of Minnesota that further violations of the state liquor control act by physicians will result in prosecution and disciplinary action by the board.

MISSOURI

New Dean at Washington.—Philip A. Shaffer, Ph.D., professor of biologic chemistry and head of the department, Washington University School of Medicine, St. Louis, has been appointed dean succeeding the late Dr. W. McKim Marriott, who had resigned to take over a similar position at the University of California Medical School, San Francisco. Dr. Shaffer had been a member of the administrative committee which had been appointed following Dr. Marriott's resignation pending the selection of a new dean. Dr. Shaffer received his degree of doctor of philosophy at Harvard in 1904 and in the same year joined the faculty at Cornell University Medical College. In 1910 he became professor of biologic chemistry and head of the department at Washington and from 1915 to 1919 served as dean of the school.

Dr. Dean Receives Gold Medal.—Dr. Lee Wallace Dean, professor of otolaryngology, Washington University School of Medicine, St. Louis, was presented with the gold medal of the American Laryngological Association at its annual meeting in Atlantic City, June 1. The medal was established by the wife of the late Dr. Arthur W. De Roaldes, New Orleans, to serve as a memorial to him and is presented from time to time through the association. Dr. Dean, a former president of the association, is the fourth recipient to receive the award in about twenty-five years, it was stated. Others were Drs. D. Bryson Delavan, New York, Chevalier Jackson, Philadelphia, and Harris P. Mosher, Boston. Dr. Dean graduated from the State University of Iowa College of Medicine in 1896. He served for many years at his alma mater as professor and head of the department of otolaryngology and oral surgery and as dean of the college of medicine. In 1927 he resigned from the faculty to become associated with Washington University. He is 64 years of age.

MONTANA

Pacific Northwest Medical Meeting.—The sixteenth annual session of the Pacific Northwest Medical Association will be held at Great Falls, July 15-17, with the following guest speakers:

Dr. Anton J. Carlson, professor of physiology, University of Chicago.
Dr. Frederick C. Rodda, associate professor of pediatrics, University of Minnesota Medical School, Minneapolis, and the graduate school.
Dr. Louis H. Newburgh, professor of clinical investigation in internal medicine, University of Michigan Medical School, Ann Arbor.
Dr. Virgil S. Counseller, assistant professor of surgery, University of Minnesota Graduate School of Medicine, Rochester, Minn.
Dr. Harold E. Robertson, Rochester, Minn., professor of pathology, University of Minnesota, Graduate School of Medicine.
Dr. Norman F. Miller, professor of obstetrics and gynecology, University of Michigan Medical School, Ann Arbor.

Further information may be obtained from the secretary, Dr. Clyde W. Countryman, 262 Paulsen Medical and Dental Building, Spokane, Wash.

NEW YORK

Personal.—Dr. Arthur W. Johnson, Mechanicville, was guest of honor at a testimonial dinner, April 7, given by the Saratoga County Medical Society to celebrate his completion of twenty years as coroner of the county. Speakers included Drs. William Van Doren, Mechanicville, who presided, and Walter S. McClellan, Saratoga Springs, and Edwin MacDonald Stanton, Schenectady.

Society News.—Dr. John E. Jennings, Brooklyn, addressed the Medical Society of the County of Nassau, April 27, on "Surgical Complications of Influenza."——Dr. Elliott P. Joslin, Boston, addressed the Broome County Medical Society, Binghamton, April 14, on "The Treatment of Diabetes and Especially the Use of Protamine Insulin."——Dr. Donald Guthrie, Sayre, Pa., discussed "Diagnosis and Treatment of Malignant Diseases of the Breast" before the Medical Society of the County of Cortland, April 16.

New York City

Personal.—Dr. Herbert S. Gasser, director of the Rockefeller Institute for Medical Research, has been elected a trustee of the Rockefeller Foundation.——Dr. Willis G. Nealley was presented with a gold watch in appreciation of his twenty-five years service as medical director of Brooklyn Hospital.——Dr. Joseph Jordan Eller has been made an honorary member of the Argentine Society of Dermatology.

Society News.—A symposium on pituitary basophilism was presented before the New York Endocrinological Society, May 26, by Drs. Bernard S. Oppenheimer, Solomon Silver, Irving H. Pardee and Aaron S. Blumgarten.——The Medical Society of the County of Queens held a joint meeting with the Queens County Bar Association, April 27, with the following speakers: Justice Meier Steinbrink of the state supreme court on "Medical Jurisprudence as It Affects the Medical Profession"; Dr. Manel E. Marten, "Science in Crime Detection," and Max D. Steuer, New York attorney, "The Supreme Court and the President."——Dr. Raphael Kurzrok discussed "Recent Advances in the Physiology of Sex and Reproduction" before the Bronx Gynecological and Obstetrical Society, May 17.

University News.—Dr. C. U. Ariens Kappers, professor of comparative neurology at the University of Amsterdam, gave an address at Long Island College of Medicine, April 7, on "The Autonomic Center of the Hypothalamus." Dr. Charles G. Kerley, emeritus professor of pediatrics, New York Polyclinic Medical School and Hospital, gave a lecture at the school, April 14, on "Making Milk Safe for Babies."——A department of nursing has been established at Columbia University with full university rating and under

the direction of the faculty of medicine. Nursing education has hitherto been administered by the school of nursing of Presbyterian Hospital, with the instruction in medical and surgical subjects. Graduates will receive the degree of bachelor of science.

NORTH CAROLINA

State Medical Election.—Dr. James B. Sidbury, Wilmington, was chosen president-elect of the Medical Society of the State of North Carolina at its annual meeting in Winston-Salem, May 5, and Dr. Wingate M. Johnson, Winston-Salem, was inducted into the presidency. Dr. Thomas W. M. Long, Roanoke Rapids, is the new secretary to succeed Dr. Louis B. McBrayer, Southern Pines, who retired after many years' service. The next annual session will be held in Pinehurst, May 2-4, 1938.

Dr. Mangum Resigns as Dean.—Dr. Charles S. Mangum, dean of the University of North Carolina Medical School, Chapel Hill, has asked to be relieved of his duties, according to newspaper reports, May 28. He has held the position since 1933. Dr. Mangum, who is 66 years of age, graduated from Jefferson Medical College in 1894. Two years later he joined the faculty at North Carolina as professor of physiology and materia medica. From 1900 to 1905 he served as professor of pharmacology and demonstrator of anatomy, and since 1905 as professor of anatomy.

OHIO

Outbreak of Spinal Meningitis.—Four deaths in four days were reported in an outbreak of spinal meningitis in Kent, according to the newspapers, May 19. The first death occurred in a youth 20 years of age, a student at the Kent State College, who became ill while working in a restaurant. The other victims were a 5 months old girl, a boy of 12 and a youth of 19, who died after becoming ill in the county jail.

OKLAHOMA

State Medical Election.—Dr. Henry K. Speed, Sayre, was named president-elect of the Oklahoma State Medical Association at its annual meeting in Tulsa, May 11, and Dr. Samuel A. McKeel, Ada, was installed as president. The next annual meeting will be held in Muskogee.

New Superintendents of Health.—Dr. James L. Adams, Hobart, has been appointed health superintendent of Kiowa County, and Dr. Harry B. Hall, Boise City, of Cimarron County. Dr. Robert M. Church, Stilwell, has been appointed to a similar position in Adair County.

PENNSYLVANIA

Hospital News.—Ground was broken for a new surgical unit to be constructed at the state tuberculosis sanatorium, Hamburg, April 27. The unit will be devoted to chest surgery and have accommodations for thirty-eight patients. The 1936 legislature appropriated $150,000 for its erection.

Philadelphia

Memorial to Texas Physician.—A bronze tablet was placed in the interns' quarters of the Philadelphia General Hospital recently in memory of the late Dr. George E. Bethel, Galveston, Texas. The funds for the memorial were subscribed to by Texas physicians who have served as interns in the hospital, former classmates and friends. Dr. Bethel was intern and assistant chief resident from 1924 to 1926 and served as dean and professor of tropical medicine in the University of Texas School of Medicine from 1928 to 1935. He died April 17, 1935.

Dr. Bland Made Professor Emeritus.—Dr. Pascal Brooke Bland, professor of obstetrics at Jefferson Medical College, has been made professor emeritus and Dr. Norris W. Vaux, clinical professor of obstetrics, has been appointed to succeed him. Dr. Bland was born in Monocacy, Pa., in 1875 and graduated from Jefferson in 1901. The following year he joined the teaching staff of the school and, in 1925, became professor. He was formerly president of the Obstetrical Society of Philadelphia. Dr. Vaux, who is 56 years of age, graduated from the University of Pennsylvania School of Medicine in 1905.

Pittsburgh

Graduate Course.—The committee on graduate education of the Allegheny County Medical Society will offer a course on the diagnosis and treatment of syphilis, July 14, 21 and 28, under the direction of Dr. Lawrence G. Beinhauer. Instruction will be given in the technic of darkfield examination; differential diagnosis from common skin diseases; serologic and spinal fluid evaluation and Wassermann-fastness. Lectures will outline the treatment of primary, secondary, tertiary, maternal and congenital syphilis, with instruction in the preparation and administration of all drugs currently used in treatment. Additional information may be obtained from the society, 5088 Jenkins Arcade.

WASHINGTON

Graduate Lectures.—The twenty-first annual course of medical lectures and clinics of the University of Washington will be presented July 19-23. Speakers will include:

Dr. Anton J. Carlson, professor of physiology, University of Chicago.
Dr. Hans Lisser, clinical professor of medicine, University of California Medical School, San Francisco.
Dr. William S. Middleton, professor of medicine, University of Wisconsin Medical School, Madison.
Dr. Waltman Walters, associate professor of surgery, Graduate School, University of Minnesota, Rochester-Minneapolis.

A fee of $10 will be charged for the course. Additional information may be obtained from the extension service of the university at Seattle.

Society News.—At a meeting of the Spokane County Medical Society, May 13, in Spokane, Drs. Frederick LeMere, Medical Lake, discussed "Experiences with Insulin Shock" and George W. Pierce, San Francisco, "Reconstruction Surgery After Trauma."——The Washington State Obstetrical Association held its first semiannual meeting in Tacoma, April 13; the program was devoted to round table discussions on treatment of puerperal sepsis, contraction rings, anatomy of the bony pelvis and prenatal and postnatal care. The society was organized January 30 with Dr. Henry H. Skinner, Yakima, as president. The next meeting will be in October.——"Surgery of Congenital Defects" was the theme of the eighth annual meeting of the Tacoma Surgical Club, April 3; guest speakers were Drs. George C. Crile, Cleveland, Paul B. Magnuson, Chicago, and Gordon B. New, Rochester, Minn. Dr. Millard T. Nelsen, Tacoma, conducted a clinic on developmental anomalies of the face and neck.

WEST VIRGINIA

Dr. Van Liere Named Dean at West Virginia.—Dr. Edward J. Van Liere, since 1935 acting dean of the West Virginia University School of Medicine, Morgantown, has been appointed dean. A graduate of Harvard Medical School, class of 1920, Dr. Van Liere has been associated with West Virginia since 1922 as professor of physiology.

WYOMING

District Meeting.—The Natrona County Medical Society sponsored a district meeting in Casper, April 24-25. The house of delegates of the state medical society met during the session, since it voted in 1936 to forego its annual meeting this year to participate in the Rocky Mountain Medical Conference to be held in Denver, July 19-21. Addresses were delivered by Drs. Marshall C. Keith, Casper, secretary of the state medical society; William O. McDermott, Casper, president of the county medical society, and George P. Johnston, Cheyenne. Other speakers included:

Dr. Joseph C. Bunten, Cheyenne, Tumors of the Kidney.
Dr. Oliver E. Torkelson, Casper, Etiology of Cancer.
Dr. John R. Nilsson, Omaha, Neb., A Series of Hernia Cases.
Dr. Joseph F. Replogle, Lander, Legislative Experiences.
Dr. Joseph J. McGill, Casper, Schilling Hemogram as a Laboratory Aid in Diagnosis and Prognosis.
Dr. William Andrew Bunten, Cheyenne, Diseases of the Pituitary Gland from the Surgical Standpoint.
Dr. George M. Anderson, Cheyenne, Federal and State Endeavor in Relation to Eradication of Syphilis.

GENERAL

Examinations in Pediatrics.—The American Board of Pediatrics announces examinations will be held in the following cities:

Los Angeles, during a meeting of region IV of the American Academy of Pediatrics, in October.
Chicago, during a meeting of region III of the American Academy of Pediatrics, November 4-6.
Boston, during a meeting of region I of the American Academy of Pediatrics, November 12-13.
New Orleans, during a joint meeting of region II of the American Academy of Pediatrics and the Southern Medical Association, December 1-3.

Definite dates for these examinations will be published later.

National Health Meeting.—During the annual meeting of the National Education Association in Detroit, June 28-30, the department of school health and physical education will present a special program. Subjects to be discussed include "The Relationship of Extra-Curricular Activities to Health," "Training School Health Personnel" and "Urgent Problems in School Health Education—Venereal Disease, Alcohol and Narcotics, Traffic Safety and Sex Education." Dr. Isaac A.

Abt, professor of pediatrics, Northwestern University Medical School, Chicago, will address the dinner session Wednesday evening on "The Physician and the School Child."

International Health Congress. — The National Health Council and the World's Fair Advisory Committee on Medicine and Public Health are perfecting plans to hold an international congress on health during the New York World's Fair in 1939. The program will be related, as much as possible, to the exhibits on medicine and public health that will be on display at the fair and it is hoped that a permanent American Museum of Hygiene, similar to the German Hygiene Museum in Dresden, will be established in New York subsequently. According to the announcement, American and foreign specialists will be asked to deliver addresses on subjects of interest not only to professional groups but to the general public as well.

Airplane Company Institutes Control Measures Against Yellow Fever.—The vaccination against yellow fever of all flying personnel, not already vaccinated, of the Pan American Airways, Inc., was begun in April at the Rockefeller laboratory in Rio de Janeiro, as a control measure. Beginning May 1, the company also requires cards to be filled out for all passengers showing where they have been or have resided for the six days just prior to embarking en route to the United States. These cards are attached to the passenger list of the airplane and will be available to the quarantine officer on arrival at its destination. A recent investigation of the U. S. Public Health Service, when fifty-three insects were captured and one escaped in twenty-four of sixty-nine inspections, proved that airplanes may be considered a health hazard so far as the importation of yellow fever is concerned unless adequate control measures are instituted.

Association of Medical Women Change Name. — The Medical Women's National Association will in the future be known as the American Medical Women's Association in accordance with action taken at its annual meeting in Atlantic City, June 7. It was stated that this was in line with the policy being adopted by the organizations affiliated with the International Medical Women's Association. Dr. Mabel M. Akin, Portland, Ore., was elected president of the association. Other officers are Drs. Kate B. B. Karpeles, Washington, D. C.; Helen G. Dennis, Portland, Ore.; Florence R. Gilpin, New Orleans, vice presidents; Helen I. A. Cary, Portland, secretary, and Mary Riggs Noble, Philadelphia, treasurer. At this meeting announcement was made of a gift to the association of a large residence in Long Beach, Calif., for use of members who are suffering poor health or economic difficulties. Dr. Alice Barker-Ellsworth, Long Beach, was the donor.

Another Foundation for Medical Research. — The Dazian Foundation for Medical Research will be created and receive the bulk of his estate under the will of the late Henry Dazian, New York, it is reported. To be used for the advancement of medical or allied scientific knowledge and the establishment of fellowships, the will stipulated that the funds were to be awarded for the further education of individuals and for research and investigation by individuals or institutions not engaged for private gain or profit. The foundation is to be managed by nine members, five of whom shall be physicians: Drs. Emanuel Libman, Israel Strauss, Alexis Carrel, Philip Finkle, New York, and Harrison S. Martland, Newark, N. J. The four lay members are Alfred L. Rose, Harold Williams, Emil Friendlander and Mr. Dazian's nephew, William W. Cohen. The will directs that twenty-five years after his death the principal of the trust be distributed to such hospitals, sanatoriums or similar institutions as the board shall determine.

Society News.—The Biological Photographic Association will hold its annual meeting in Rochester, N. Y., September 23-25.——Dr. Russel H. Patterson, New York, was chosen president of the American Society of Regional Anesthesia at its meeting in New York, April 20; vice presidents are Drs. Hyman Lieber, New York; Henry S. Ruth, Philadelphia, and Brian C. Sword, New Haven, Conn., and Dr. Paul M. Wood, New York, was reelected secretary. They will assume office July 1.—— Dr. John Hamilton Crawford, Brooklyn, has resigned as editor of the *Bulletin* of the American Heart Association and has been succeeded by Dr. Lucy Du Bois Porter Sutton, New York.——Dr. Isidore Friesner, New York City, was chosen president-elect of the American Otological Society at its annual meeting, May 8, and Dr. Harris P. Mosher, Boston, was installed as president. Dr. Thomas J. Harris, New York City, was reelected secretary. The next annual meeting will be in Atlantic City.—— At a meeting of the American Gynecological Society in May, Dr. Noble Sproat Heaney, Chicago, was elected president, and Dr. Richard W. TeLinde, Baltimore, was reelected secretary.——Dr. Harold Brunn, San Francisco, was chosen president-elect of the American Association for Thoracic Surgery at its annual meeting, June 1, and Dr. Stuart W. Harrington, Rochester, Minn., was installed as president. Dr. Richard H. Meade Jr., Philadelphia, was reelected secretary. The next annual session will be held in Atlanta, Ga., the date to be determined later.—— Dr. John F. Barnhill, Miami Beach, was elected president of the American Laryngological Association at its annual meeting, May 31, and Dr. James A. Babbitt, Philadelphia, was reelected secretary.——At the annual meeting of the National Tuberculosis Association, June 2, Dr. Jay A. Myers, Minneapolis, was elected president, and Dr. Charles J. Hatfield, Philadelphia, reelected secretary. The next annual meeting will be in Los Angeles, June 20-23, 1938.——Mr. James F. Ballard, Boston, was chosen president of the Medical Library Association at its annual meeting, May 24, and Miss Janet Doe, New York, was reelected secretary. The next annual session will be in Boston.—— At the annual meeting of the American Academy of Pediatrics in New York, June 4, Dr. Henry F. Helmholz, Rochester, Minn., was named president-elect and Dr. Philip Van Ingen, New York, was inducted into the presidency. Dr. Clifford G. Grulee, Evanston, Ill., is secretary. ——Dr. Walter R. Steiner, Hartford, Conn., was elected president of the American Association of the History of Medicine at its annual meeting in Atlantic City, May 3; Dr. Esmond R. Long, Philadelphia, vice president, and Dr. Edward J. G. Beardsley, Philadelphia, secretary, reelected. The next annual session will also be held in Atlantic City in May.——Dr. Richard H. Hutchings, Utica, N. Y., was chosen president-elect of the American Psychiatric Association at its annual meeting in Pittsburgh, May 10-14, and Dr. Ross M. Chapman, Towson, Md., was installed as president. Dr. William C. Sandy, Harrisburg, Pa., was reelected secretary.

Monument to X-Ray Martyrs.—A recent issue of *Radiography and Clinical Photography* lists the names of American x-ray martyrs that appear on a monument erected last year by the German Roentgen Society before the Roentgen Institute of St. George's Hospital, Hamburg, Germany. The monument is a four sided shaft of stone bearing on one side the following epitaph:

To the Roentgenologists, and Radiologists of all nations—doctors, physicists, chemists, technicians, laboratorians and nurses—who sacrificed their lives in the struggle against the diseases of mankind. They were heroic pioneers who made possible the successful and safe use of roentgen and radium rays in medicine.

Immortal is the Glory of the Work of These Dead.

Following is the list of Americans included in the 160 names on the monument:

Robert Abbe, New York
Frederick H. Baetjer, Baltimore.
Burton E. Baker, Hartford, Conn.
John Bauer, Hartford, Conn.
Thomas J. Buchanan, Philadelphia
Eugene W. Caldwell, New York
Clarence Dally, East Orange, N. J.
Walter J. Dodd, Cambridge, Mass.
Lewis M. Early, Columbus, Ohio
William C. Egelhoff, Chicago
Elizabeth Fleischman, San Francisco
Robert Friedlander, Chicago
Wolfram C. Fuchs, Chicago
Stephen C. Glidden, Danville, Ill.
Henry Green, Hartford, Conn.
Judge Hough, New York
Mihran H. Kassabian, Philadelphia
Edmund C. Kells, New Orleans
William Krauss, Memphis, Tenn.
John A. Lee, Brooklyn
Charles L. Leonard, Philadelphia
William C. Lyle, Lynchburg, Va.
Robert H. Machlett, New York
John McIntosh, Chicago
S. H. Monell, New York
James T. Morehouse, Newark, N. J.
Lawrie B. Morrison, Boston
Gardner Parker, Pocahontas, Iowa
John Pitkin, Buffalo
Heber Robarts, Belleville, Ill.
F. L. R. Satterlee, New York
Ira Simms, New York
William B. Snow, New York
Frank H. Swett, Boston
Benjamin F. Thomas, Columbus, O.
Charles H. Viol, Pittsburgh
Rome V. Wagner, Chicago
Thurman Wagner, Chicago
Louis A. Weigel, Rochester, N. Y.

FOREIGN

Harben Gold Medal Awarded.—The council of the British Royal Institute of Public Health has awarded the Harben Gold Medal to Sir Frederick Edward Gowland Hopkins, professor of biochemistry, University of Cambridge, according to *Science*. The medal is awarded triennially under a trust created by the late Sir Henry Harben "to the person, irrespective of nationality, who, in the opinion of the council, has rendered the most eminent services to public health."

No Yellow Fever in Hongkong.—THE JOURNAL, May 29, printed a news item reporting two cases of yellow fever in Hongkong, which was credited to the Chicago *Tribune*. We are informed by the U. S. Public Health Service that these two cases of yellow fever were incorrectly diagnosed as such by Hongkong health authorities. A postmortem examination of one of the cases which proved fatal showed the disease to be leptospirosis, an infectious jaundice which is stated to be common in the Orient. The similarity in the symptoms between leptospirosis and yellow fever was the reason for the error. The original story in the *Tribune* was an Associated Press dispatch.

Foreign Letters

LONDON

(From Our Regular Correspondent)

May 22, 1937.

The British Medical Association and the Nostrum Evil

In a memorandum submitted to the select committee of the House of Commons on Medicine Stamp Duties, the British Medical Association has reviewed its endeavors to combat the danger to public health from the unrestricted advertisement and sale of patent medicines. In the early years of the present century the association published a series of analyses of popular remedies with the object of showing their worthless nature and the trivial cost of preparations for which the makers made exaggerated claims and which they sold at exorbitant prices. In evidence submitted to the Select Committee on Patent Medicines appointed in 1912 the association advised the publication on each packet of medicine of the name and quantity of each of the constituents, the application of the Food and Drugs Acts to proprietary medicines, and the institution of legal proceedings against offenders. Pending the adoption of such a measure by the government, the association has performed a considerable amount of educational work with success by getting the more responsible newspapers and periodicals to reject objectionable or misleading advertisements.

The objections of the association to the uncontrolled advertisement and sale of patent medicines rest mainly on the dangers which arise from self diagnosis and self treatment. The lay person has not the knowledge to evaluate his symptoms and diagnose his complaint; neither can he know whether the remedy offered is that required for his individual condition. The patent medicine is offered as a stock treatment for all sorts of patients regardless of their individual peculiarities. It is also offered for a host of dissimilar conditions. Moreover, the proper treatment of disease requires early diagnosis. While the patient is taking the patent medicine he is losing valuable time. The delay is particularly serious in certain diseases. The association has therefore endeavored to secure the prohibition of the sale, in the absence of a prescription from a physician, of remedies alleged to cure or relieve Bright's disease, cancer, consumption, diabetes, epilepsy, fits, locomotor ataxia, lupus, paralysis, amenorrhea, hernia, blindness and any ailment of the auditory system.

English and German University Celebrations

In a previous letter (THE JOURNAL, April 18, 1936, p. 1402) was reported the refusal of the English universities and learned societies to attend the celebration of the University of Heidelberg because of the political intolerance which emptied the German universities of many of their most eminent teachers. Göttingen University is to celebrate its bicentenary June 20 and Oxford University has again refused to attend. Whether the mistake of sending invitations was again repeated this year in the case of the other English universities has not transpired. As in the case of Heidelberg, the anomaly of celebration under the circumstances has aroused criticism in the press.

The scientific journal *Nature* says that probably no university preserved so high a standard over so long a period as Göttingen. Among its professors were Haller (a Swiss), the first modern physiologist, Gauss, the eminent mathematician, astronomer and experimenter, Blumenbach, the father of anthropology, the brothers Grimm, the begetters of philology, and Henle, the founder of histology. After the war the mathematicophysical group there formed the most important scientific school in Germany. But in 1933 a change occurred. A great number of the library books were burned without any protest from the rector. In 1934 came "the clean up," when many of the most eminent teachers were expelled. "We got rid of what was outworn and superfluous in the university," said the minister of education. It is curious to recall some of the men to whom he applied these adjectives. They included 1. Professor Bernstein, who had been on the staff for twenty-five years and was director of the Institute of Mathematical Statistics. He now holds a chair at Columbia University. 2. Professor Born, famous for his work on the quantum theory. He now holds a chair at Edinburgh. 3. Professor Courant, chief organizer of mathematical research, now professor at New York. 4. Professor Franck, who won the Nobel prize in physics. On resigning he wrote that he could not remain silent while his colleagues were being dismissed. This drew an abusive "protest" from thirty-three professors and teachers.

In all, twelve professors have been displaced, of whom five now hold chairs in America and one each at Edinburgh, Oslo and Copenhagen. The total losses to the German universities and seats of higher learning amount to 1,684 teachers expelled. In addition there are quiet resignations, which must bring the total up to 2,000. The excited and threatening atmosphere in which work is now carried on is inimical to science. It is therefore not surprising that estimates are unanimous in finding a rapid and continuous fall in quality. *Nature* concludes: "Göttingen ceased in 1933 to be a scientific center. On June 30th visitors will celebrate a unique series of losses of learning, liberty and life."

PARIS

(From Our Regular Correspondent)

May 22, 1937.

Periodic Examination of Chauffeurs

Examinations at intervals are now required of all chauffeurs of taxis and motor trucks. This ought to be extended to those who drive their own cars and to chauffeurs of private cars. Intoxication is one of the most frequent causes of accidents. There are two types of drunken drivers, the one who is a chronic alcoholic and the other a so-termed Sunday drunkard, who restricts his excesses to holidays in general. To make a distinction between these two forms of intoxicated chauffeurs, the Academy of Medicine of Paris has asked that every automobilist, whether he drives his own or some one else's car, should carry a "route book" in which every accident shall be inscribed. This would be of great aid to the courts in a search for the person responsible for an accident.

A single examination for a driver's license does not suffice. A person who has been examined at the age of 20 or 25, or even 30 years, and found fit to drive may not be so ten years later. Latent or acquired syphilis may be rapidly followed by tabes or dementia paralytica. Aortitis that could not be detected when the applicant was first examined may be the cause of sudden death at the wheel later on. A chauffeur who was not an alcoholic addict when first examined may acquire this vice ten years or more after his license tests. As one grows older, both vision and hearing change; hence these should be checked up.

The periodic examination of all chauffeurs is the subject of an article by Bzowski in the Dec. 20, 1936, *Journal de médecine de Bordeaux*, in which the following order of frequency of periodic examinations is suggested: between the ages of 20 and 35 years, every five years; between 35 and 50, every three years; between 50 and 60, every two years; above 60, every year. In the case of any person who has had syphilis, the same method should be adopted as in Germany and certain French insurance companies, to consider the age of the applicant as being advanced by five years. A chauffeur 46 years of age would be considered as being 51 years old and hence subject to reexamination every two years. The finding of some physical or mental defect does not mean permanent rejection but is subject to revision after a certain period; in the case of a mitral lesion, one year.

Defects can be grouped as (1) physiologic, (2) technical or (3) psychologic. The medical examination aims to evaluate the first of these, and the severity of mechanical tests the second. For the third group, a series of psychomotor and emotion reaction tests were devised by Gamus, Netter and Binet for the examination of air pilots during the World War. The reaction time was measured by the d'Arsonval electric chronometer. The effect on the nervous system caused by a revolver shot was measured by the graphic methods employed in experimental physiology for estimating changes in cardiac and respiratory rhythm, vasomotor system and muscular twitching. Although the psychomotor reactions are reliable, the same cannot be said of the emotional reactions, which are of a more complex nature.

After every accident, a chauffeur ought to be subjected to a general medical examination and the reaction time again tested.

The administration of the Paris omnibus system employs the following tests before employing chauffeurs. Any visitor can verify the necessity of quick reflexes when a large bus twists in and out of the narrow streets in some portions of the city. In this company's tests the applicant is placed on a platform, which is furnished with all the equipment that he will find on a bus. A film is projected in front of him, which includes every possible incident and accident, such as a pedestrian trying to cross in front of the bus, or a vehicle suddenly coming out of a side street. The original feature of the film is that it is put into motion or stopped by the applicant himself when he manipulates the clutch, steering wheel and brake. The faster he runs, the more rapidly does the film turn, and vice versa. The signals to stop or start are registered on a drum under control of the examiner simultaneously with the various incidents and accidents of the film which the applicant has encountered. As a result, one obtains an accurate graph of the reactions of the applicant.

Bzowski believes that this method of examining applicants for the position of chauffeur of Paris busses ought to be extended to all persons who have occasion to run a vehicle carrying more than eight passengers as well as for all taxi chauffeurs. As to other automobilists, a minimum examination ought to include obligatory general medical examination and the psychotechnical tests after every serious accident. If these show incapacity to conduct an automobile, the medical examiner should have the right to have the driving license canceled. There are many cyclists on the routes in France and other European countries. Failure to show a red light on the rear of the machine at night is a frequent cause of fatal accidents here. Speed laws are but little enforced in France, and motorcycle policemen on the routes are few and rarely seen. Visitors to Paris and other large cities often wonder why there are not more accidents when one has the opportunity to note the speed with which automobiles, especially taxis and busses, are allowed to run.

Deficit in Social Insurance Budget for 1935

Dr. Dordives in the May 1 issue of the *Siècle médical* gives some statistics regarding the social insurance budget for 1935. Receipts were 1,188 million francs; expenditures (including 26 million turned over to the guaranty fund) were 1,253 million francs. The figures for 1936 are not yet published, but it is known that there have been a smaller number of insured during 1936, owing to the large number of unemployed. In addition, the premium rate was reduced, so that the deficit for 1936 will probably exceed that of 1935.

Familial Icterus Cured by Blood Transfusions

Recovery from familial icterus of the new-born is so rare, according to Péhu, Noel and Brochier of Lyons, that they reported a case at the March 23 meeting of the Académie de médécine of Paris. The family history was as follows: There had been five children, a girl now 7 years old in good health, a second baby who died on the fourth day of icterus, a third child who had an intense icterus at birth, followed by a nervous syndrome (nuclear icterus) with retarded intelligence, and who died at the age of 3½ years. The fourth child also had an icterus five hours after birth. This baby recovered following three intragluteal injections of citrated blood from a universal donor. Icterus appeared at the end of the first day in the fifth child, became progressively more intense, and was accompanied by palpable enlargement of the liver and spleen. Recovery also followed the use of citrated blood from a universal donor.

BERLIN

(From Our Regular Correspondent)

May 19, 1937.

Influence of Sterilization Law on Admissions to Psychiatric Institutions

The law for the prevention of hereditarily diseased offspring (THE JOURNAL, Sept. 9, 1933, page 866) has been in effect for several years, and an investigation of its influence on the admission material of institutions for the treatment of mental disorders should be of interest. Three serious hereditary diseases are readily recognized; these are congenital feeblemindedness, chronic alcoholism and hereditary epilepsy. In cases of any of the foregoing, relatives find it extremely difficult to prevent commitment, since so many unequivocal manifestations of these disorders are apt to occur outside the home. As to schizophrenic patients, numerically the most formidable category, it seems easiest to convince the relatives of such persons that it is a question of mental disease, the severe manifestation of which necessitates hospitalization. Milder cases, treated policlinically, are perhaps less likely to be hospitalized. Moreover, many schizophrenic persons are for long regarded as merely psychopathic. The depressive patient offers the most difficult problem. The term "depressive" is applied to many schizophrenic patients in addition to the true depressive types. In depressive cases relatives are often loath to realize that it is a question of psychosis.

It is interesting to see how these general observations are specifically reflected in the statistics of the Munich Psychiatric Clinic. The total number of admissions has undergone no important change; it has slowly increased for patients of both sexes. If only patients of tainted heredity are considered, however, a manifest decline is observed to have taken place during 1934: among the men from 462 to 394, among the women from 560 to 436; namely, declines of from 32 to 26 per cent and from 50 to 42 per cent, respectively. In 1934, to be sure, the Eugenics Court ordered no hospitalizations. With promulgation of the new legislation the number of admissions of cases in the first named triad of disorders (feeblemindedness, alcoholism and epilepsy) declined, then rose suddenly for both sexes in 1935; namely, from one-third to two and one-half times that of the previous year. The increase in the number of male patients continued into 1936. For schizophrenic patients the percental proportion remained unchanged. The figures for depressive patients were the most noteworthy: the number of men patients sank from sixty-nine in 1932 to twenty-nine in 1935; that is, by more than 50 per cent. The same trend was noted among women patients excepting that here the maximal figure (117) was much higher, thus reflecting the greater incidence of depressive insanity among women. Admissions of patients presenting schizophrenia, socially the most important and most frequent hereditary disorder, have on the whole not fallen off. Feeblemindedness and alcoholism are more easily recognized than in former years. On the other hand, a greater proportion of depressive patients seemed able to elude proper hospitalization. Whether these persons remain at home or are diverted to other institutions under a false diagnosis of neurasthenia, it is impossible to say.

The German Society of Research on Circulation

The convention of the German Society of Research on Circulation was held at Bad Nauheim. Sir H. H. Dale of London first spoke on vasodepressor substances. He considered especially the rôle of histamine. This substance is liberated by nervous stimulation of the tissues and dilates the vessels of the working musculature. It is not present in free form in the blood but only in an inactive compound and it is probably contained in the leukocytes in a rudimentary form. Liberated acetylcholine has no share in the vasodilatation. It is as quickly destroyed as produced and for this reason is principally found in isolated organs. Cholinergic and adrenergic nerves must be differentiated. The vasodilator substances appear as a consequence of muscular contraction within the musculature proper. Thus far it has not been determined with certainty which substances produce a vasodilatation.

Hermann Rein, Göttingen physiologist, read a paper on epinephrine and kindred substances. Epinephrine does not circulate within the organism in as large quantities as one is inclined to concede but in much smaller measure. These small quantities of epinephrine secreted by the adrenals regulate circulation without exerting any influence on the blood pressure and guarantee an optimal distribution of blood. Each vessel may exhibit a different reaction to epinephrine. The nature of the reaction will depend on the condition of the organism; thus, for example, epinephrine will dilate the vessels in working muscles. The metabolic products elicited by muscular activity alter the vascular capability of reaction to epinephrine. The dosages of epinephrine usually employed in pharmacologic and therapeutic practice are far too high and unphysiologic. By means of a new substance, 1-para-oxyphenyl-2-methyl-ethyl-aminopropane, which represents a reduction product of epinephrine, Rein was able to maintain only the regulatory action of the latter substance without the deleterious action.

Among other papers read, Raab of Vienna discussed "The Suprarenal Glands and Angina Pectoris." Muscular exertion, mental excitement and cold are conducive to attacks of angina pectoris. This mechanism takes place by means of the elimination of epinephrine. By restriction of adrenal function the susceptibility to attacks of this sort is substantially reduced, and eventually the condition is cured. Raab accordingly subjects the adrenal glands to roentgen irradiation.

Schenk of Danzig discussed circulation of the blood at the menopause. The remission of sex hormone in old age is the occasion for a stimulation of the anterior lobe of the hypophysis; secondarily the excitation of the thyroid and adrenals thus produced results in the pathologic symptoms of the climacteric. In men there appear as characteristic changes in the voice, in sexuality and fatigability as well as complaints indicative of coronary insufficiency. Muscularly strong types are above all affected.

The New Roentgen Center

A "Roentgen Bureau" has just been established at Munich by the German Roentgen Society. It represents the realization of a long cherished ideal. The function of this center will be to build up a library collection which will cover the entire field of radiology. It will also house much helpful supplementary material and a card catalogue of works on general and specific topics related to radiology. Provision has also been made for a museum collection of radiologic and kindred apparatus to illustrate the historical development of the field. The building up and completion of the collections is in charge of the recently created Roentgen Memorial Foundation. All the work of acquisition and cataloging will be supervised by this body. The honorary officers of both library and museum are appointed by the head of the German Roentgen Society. The library and other collections are already established and in use. Ample facilities for study and reference make the material readily accessible to the research worker.

ITALY

(From Our Regular Correspondent)

May 15, 1937.

Fracture of Neck of Femur

Professor Galeazzi, head of the Clinica Ortopedica e Traumatologica of the Milan University, in a lecture to the physicians of the army spoke on fractures of the neck of the femur. According to the speaker, healing of fractures of the neck and consolidation of the fracture with bone callus formation, with consequent functional recovery of the limb, can be attained by means of a well conducted treatment based on an exact diagnosis of the type of the fracture, of which there are four: subcapital fracture of the femur, that is, between the head and the neck; an intermedian fracture which, as a rule, is oblique, and the pretrochanteric and lateral fractures. Fractures of the upper part of the femur run to the base of the neck or through the trochanter and are benign in two thirds of the cases. In the other third the fractures run through the neck and frequently are subcapital. Many surgeons resort to traction by weights in the treatment of subcervical and pretrochanteric fractures. Others, believing that fractures of the neck do not heal in the elderly, leave the patient to his fate with a non-treated fracture, of which not even roentgenograms are taken. According to the speaker, satisfactory results are obtained in pretrochanteric and lateral fractures at the base of the neck from continued longitudinal traction with weights. The limb is maintained in constant abduction and internal rotation. This method of treatment demands constant supervision of the surgeon and the application of technical refinements. In the treatment of intermedian and subcapital fractures, the treatment depends on the exact knowledge of the displacement of the fragments, which is obtained by the study of three roentgenograms, two of which are taken in the frontal view and the other one in the sagittal view of the neck in relation to the axis (the so-called axial roentgenogram). Intermedian fractures have a tendency to remain in insufficient consolidation. Lateral fractures heal more easily than the intermedian. Complicating pseudarthrosis in these cases, especially in the elderly, originates in insufficient blood supply to the head of the femur. The latter, according to Schmore, is not due to obliteration of the vessels of the round ligaments, from sclerosis of the vessels. It is due to occlusion of the vessels by the displacement of the fractured fragments. In order to consolidate the fracture, the perfect adjustment of the surfaces of the fractured bone is important and can be obtained by the use of a plaster cast, by the application of Whitman's method of prolonged immobilization or by direct union of the fragments. Whitman's method is based on the examination of the mechanical condition of fractures of the neck. It is of value except in the elderly and in abnormal persons, in whom it is contraindicated because of the necessary immobilization for at least six months. Modern surgeons operate in recent fractures of the neck. Fixation of the fracture by the Smith-Petersen pin, by which the surfaces of the fragments are held in contact in the correct position for as long as it is necessary to obtain consolidation, is generally preferred. Johannson's extra-articular technic for fixation of the fracture with a nail is the ideal operation in fractures of the neck, even if old, as well as in pseudarthrosis, provided there is a normal blood supply of the head of the femur and a normal head. Alterations in the segment of the head from insufficient blood supply are shown in the roentgenogram of the head by a shadow darker than that of the surrounding decalcified bone tissues. In certain favorable forms of pseudarthroses, Pauwels' subtrochanteric cuneiform osteotomy gives satisfactory results. The operation is done by placing a nail in the greater trochanter and another at the diaphysis, which serve the purpose of showing the direction of the fragments after osteotomy. The operation results in an inclination of the plane of the pseudarthrosis, with correction of the condition.

Society Reunion

The Accademia delle Scienze Mediche e Chirurgiche met recently at Naples under the chairmanship of Professor Jappelli. Professor Ora reported results of experiments to determine the efficacy of the oral administration of bismuth for the prevention of syphilis. Out of a group of thirty-five rabbits which were given a bismuth preparation (Bismutrat) orally, only seven lived long enough to show the results of the experiment. In two of the surviving rabbits syphiloma developed to the extent that spirochetes were injected, while in the other five popliteal adenopathies developed. In one rabbit, given large doses of bismuth compound for a long time, bismuth poisoning appeared and syphilitic adenopathy also developed. The speaker stated that bismuth fails to protect the animals against syphilis if it is administered by mouth, even if it is given in large doses.

Professor Repetto reported results of experimental vesical mycosis in rabbits, which were placed in three groups. A suspension of fungi was directly instilled in the bladder of the animals in the first group, injected in the renal parenchyma by the lumbar route to those of the second group and intravenously administered to those in the third group. Vesical stasis was induced from a few hours to a week after the injections. Chemical and microscopic examinations of the urine were made in all cases, and cultures with the sediment of the urine, which was withdrawn with a catheter, were prepared. Groups of animals, containing those of the first, second and third groups in the experiments, were killed on the fifteenth, thirtieth, sixtieth and ninetieth days after inoculation, respectively. In all cases the histologic examination of the bladder was made. It was found that the bladder presents resistance to the fungous infection, even if favorable conditions for the development of fungi such as the presence of vesical stasis or of injected dextrose are created. Direct inoculation of fungi to the bladder is the easiest route of infection. The intravenous and descendent renal routes, as a rule, fail to cause vesical mycosis. The anatomopathologic lesions are not diffused. As a rule, they become encapsulated and follow a process of spontaneous resolution.

Deaths

Prof. Achille Monti, professor emeritus of pathologic anatomy of the Pavia University, is dead. He was a pupil of Golgi, Kock and Weichselbaum. He wrote works on epidemic jaundice and did important work in preventing malaria in Italy, especially by improving the living conditions of the people.

General Dr. Luigi Montanari of Parma died recently in that city at the age of 104. He wrote important articles on fatigue, which were reviewed and developed by the physiologist Dr. Angel Mosso. Dr. Montanari's mind was completely lucid all through the last years of his life, during which he had the same interest in science as he had in previous years.

Marriages

CRAIG WRIGHT MUCKLE, Haverford, Pa., to Miss Christine Murdoch Kendrick of Philadelphia, June 3.

DEVEAUX BLAIR SULOUFF, New York, to Miss Marguerite Elizabeth Graybill of Roanoke, Va., May 8.

THOMAS F. HARMON, Springfield, Ill., to Miss Eleanor Virginia Colley, of Oklahoma City, May 12.

STEPHEN STOCKTON WOOLSTON to Miss Elizabeth Vaux Ingersoll, both of Philadelphia, June 5.

JAMES A. ROGERS to Miss Olivia M. Dunican, both of Rockville Centre, N. Y., June 3.

HELEN L. MILLER, New York, to Mr. Alexander F. Armstrong of Albany, June 2.

EDWIN M. BUTLER, Centerville, Miss., to Miss Redolia Davis of Atlanta, Ga., May 5.

Deaths

George Aloysius Leitner ⊕ Piermont, N. Y.; Bellevue Hospital Medical College, New York, 1888; fellow of the American College of Surgeons; member of the House of Delegates of the American Medical Association, 1925-1935; visiting surgeon to the Nyack (N. Y.) Hospital and the Rockland County Tuberculosis Hospital, Pomona Park; surgeon to the Letchworth Village, Thiells, and Rockland State Hospital, Orangeburg, and consultant to the Good Samaritan Hospital, Suffern; health officer of Hudson Valley and eight villages and townships in that area; aged 71; died, May 18, in the Harkness Pavilion of the Columbia-Presbyterian Medical Center, New York.

Edwin Albert Spies, New York; Fordham University School of Medicine, New York, 1910; member of the Medical Society of the State of New York; fellow of the American College of Surgeons; adjunct professor of orthopedic surgery at the New York Polyclinic Medical School and Hospital; served during the World War; visiting surgeon, in charge of skeletal surgery, Morrisania City Hospital; visiting orthopedic surgeon to the Misericordia Hospital; consulting orthopedic surgeon to the Westchester Square Hospital, New York, and St. Francis Hospital, Poughkeepsie; aged 49; died, March 22, at his home in Pelham, of chronic nephritis and coronary thrombosis.

James John Quiney ⊕ Easton, Pa.; Jefferson Medical College of Philadelphia, 1903; past president and secretary of the Northampton County Medical Society; member of the American Roentgen Ray Society, the Radiological Society of North America and the American College of Radiology; formerly health officer of Easton; chief roentgenologist to the Easton Hospital; formerly on the staff of the Warren (Pa.) Hospital; aged 55; died, March 31, of coronary sclerosis and hypertension.

George Edward Potter ⊕ Detroit; Detroit College of Medicine, 1896; fellow of the American College of Surgeons; director of the Harper Hospital Polyclinic, 1907-1908; clinical assistant to chair of surgery, 1908-1911; clinical professor of urology, 1911-1914, and associate clinical professor of surgery, 1914-1921, Detroit College of Medicine and Surgery; on the staff of the Providence Hospital; aged 64; died, March 16, of lobar pneumonia.

Willard Eugene Smith, Wilmington, Del.; Jefferson Medical College of Philadelphia, 1899; member of the Medical Society of Delaware; formerly member of the city board of health; member of the staff of the Physicians and Surgeons Hospital, now known as the Wilmington General Hospital, of which he was formerly chairman of the medical board; aged 72; died, March 23, of cardiovascular renal disease.

Lynn Gray Taylor ⊕ Kansas City, Mo.; Western Reserve University Medical Department, Cleveland, 1882; formerly professor of neurology at the University of Kansas School of Medicine, professor of physiology at the Western Dental College and professor of physiology at the Kansas City College of Pharmacy; aged 77; died, March 31, of thyrotoxicosis and arteriosclerosis.

Frederick Ellsworth Sutherland ⊕ Janesville, Wis.; Chicago Homeopathic Medical College, 1903; Northwestern University Medical School, Chicago, 1908; formerly secretary of the Rock County Medical Society; served the Mercy Hospital in various capacities; aged 58; died, March 20, of bronchopneumonia, coronary sclerosis and cardiac asthma.

Edward Roberts Plank ⊕ Carlisle, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1903; president and for many years a member of the board of health of Carlisle; served during the Spanish-American and World wars; aged 57; on the staff of the Carlisle Hospital, where he died, March 13, of lobar pneumonia.

James Theodore Redwine ⊕ Wahjamega, Mich.; Beaumont Hospital Medical College, St. Louis, 1900; past president of the Tuscola County Medical Society; superintendent of the Michigan Farm Colony for Epileptics; aged 61; died, March 16, in the University Hospital, Ann Arbor, of heart disease.

Arthur William Wermuth, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1912; member of the Illinois State Medical Society; aged 47; on the staff of the Ravenswood Hospital, where he died, April 17, of coronary occlusion and bronchopneumonia.

John Decamp Winter, Wynne Wood, Okla.; University of Nashville (Tenn.) Medical Department, 1909; member of the Oklahoma State Medical Association; served during the

World War; aged 51; died, March 9, in the Veterans Administration Facility, Muskogee, of carcinoma of the stomach.

Joseph Shackelford Stephens ✠ Natchitoches, La.; Tulane University of Louisiana Medical Department, New Orleans, 1885; formerly member of the state board of health, and president of the parish school board; aged 76; died, March 27, of arteriosclerotic heart disease and nephritis.

Manuel Daniel Rojas y Delgado, Puerto Castilla, Honduras, Central America; Tulane University of Louisiana School of Medicine, New Orleans, 1917; fellow of the American College of Surgeons; medical superintendent for the United Fruit Company; aged 48; died, March 8, of gunshot wounds.

Arthur Foster McCormick ✠ Falls Creek, Pa.; Jefferson Medical College of Philadelphia, 1903; served during the World War; aged 59; formerly in charge of the x-ray and laboratory department of the Maple Avenue Hospital, Du Bois, where he died, March 5, of myocarditis and hypertension.

George Clark Rublee, Rochester, N. H.; University of Vermont College of Medicine, Burlington, 1906; member of the New Hampshire Medical Society; served during the World War; on the staff of the Frisbie Memorial Hospital; aged 54; died, March 31, of cerebral hemorrhage.

Earle Francis Prior, Cochituate, Mass.; Tufts College Medical School, Boston, 1924; member of the Massachusetts Medical Society; served during the World War; formerly city physician of Malden; aged 39; was found dead, March 4, of carbon monoxide poisoning.

William Milton Rathgeber, Newark, N. J.; Long Island College Hospital, Brooklyn, 1923; member of the Medical Society of New Jersey; aged 40; was found dead, March 21, in his garage at East Orange, of accidental asphyxiation due to an automobile exhaust.

John J. Wakefield, Bloomfield, Ky.; University of Louisville Medical Department, 1876; member of the Kentucky State Medical Association; aged 84; died, March 23, in St. Joseph Infirmary, Louisville, of injuries received when he was struck by an automobile.

Richard Frank Tomlinson, San Francisco; Hahnemann Medical College, San Francisco, 1900; member of the California Medical Association; fellow of the American College of Surgeons; visiting surgeon to the Children's Hospital; aged 63; died, March 13.

Harriet Mary Wiley Whitney, Ashland, O.; Laura Memorial Woman's Medical College, Cincinnati, 1897; member of the American Psychiatric Association and the New England Society of Psychiatry; aged 62; died, March 25, in a hospital at Wrentham, Mass.

William Richard Hunt ✠ Clarksville, Ark.; Arkansas Industrial University Medical Department, Little Rock, 1884; president of the Johnson County Medical Society; formerly on the staff of the Johnson County Hospital; aged 73; died, March 30.

Augustus Henry Hayden, Columbia, S. C.; Medical College of the State of South Carolina, Charleston, 1888; for many years a member of the state board of health; aged 77; died, March 29, in a local hospital, of arteriosclerosis and nephritis.

Harriet Elizabeth MacSorley, Miami, Fla.; Maryland Medical College, Baltimore, 1912; formerly a practitioner in Philadelphia; aged 56; died, March 17, in a hospital at Venice, Fla., of surgical shock, following an operation for hip reconstruction.

Max Overton Usrey, Blytheville, Ark.; Kentucky School of Medicine, Louisville, 1907; member of the Arkansas Medical Society; served during the World War; formerly city health officer; aged 54; died suddenly, March 29, of angina pectoris.

Ira Hurst ✠ Parksley, Va.; University of Virginia Department of Medicine, Charlottesville, 1904; served during the World War; aged 57; died, March 28, in the United States Marine Hospital, Baltimore, of carcinoma of the liver.

Benjamin Charles Klein, Chicago; Rush Medical College, Chicago, 1936; intern at the Hospital of St. Anthony de Padua; aged 26; died, March 27, in St. Cloud, Minn., of Addison's disease, pulmonary edema and heart disease.

George Timothy Joyce ✠ Rochester, Minn.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904; aged 57; died, March 29, in St. Mary's Hospital, of coronary occlusion.

Sterling Price Rumph ✠ Baird, Texas; Memphis (Tenn.) Hospital Medical College, 1904; Jefferson Medical College of Philadelphia, 1905; county health officer; aged 57; died, March 13, in a hospital at Cisco, of heart disease.

Calvin B. West, Jamesville, N. Y.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1893; aged 69; died, March 19, in a hospital at Syracuse, of arteriosclerotic heart disease.

Clifford Walter Sumner ✠ Granville, N. Y.; Albany (N. Y.) Medical College, 1902; served the Emma Laing Stevens Hospital in various capacities; aged 62; died, March 19, of cerebral hemorrhage.

Harry Crawford Wayble, St. Bernard, Ohio; Medical College of Ohio, Cincinnati, 1904; served during the World War; aged 56; died, March 17, in the Christ Hospital, Cincinnati, of lobar pneumonia.

Harry Herbert Postle ✠ Newark, Ohio; Starling Medical College, Columbus, 1896; served during the World War; on the staff of the Newark Hospital; aged 63; died, March 21, of coronary thrombosis.

Frank Lee Niles, Wood Ridge, N. J.; Columbia University College of Physicians and Surgeons, New York, 1914; aged 53; school physician; died, March 26, of poison, self administered.

Orville Jay Richardson, Manifest, La.; Tulane University of Louisiana Medical Department, New Orleans, 1907; aged 51; died, March 29, in the Ferriday (La.) Hospital, of heart disease.

Edgar Morris Watson, Washington, D. C.; Howard University College of Medicine, Washington, 1936; aged 25; intern at the Freedmen's Hospital, where he died, March 9, of pneumonia.

Harry Griffin Sanders, Burgin, Ky.; University of Louisville Medical Department, 1893; formerly member of the state legislature; aged 68; died, March 30, of cerebral hemorrhage.

Ernest Walter Tonkin, Niles, Mich.; Detroit College of Medicine, 1895; member of the Michigan State Medical Society; aged 66; died, March 28, of coronary thrombosis.

Melancthon Braham Snyder, Council Bluffs, Iowa; University of Michigan Homeopathic Medical School, Ann Arbor, 1887; aged 80; died, March 31, of carcinoma of the colon.

Michael Servetus Seip, Easton, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1876; aged 89; died, March 18, in the Betts' Private Hospital, of senility.

Frank Burton Sanford ✠ Canton, N. Y.; Albany (N. Y.) Medical College, 1893; since 1928 health officer of the village of Canton; aged 65; died, March 4, of angina pectoris.

Caryl Fenelon Seely White, Guilford, Conn.; Yale University Medical School, New Haven, 1881; aged 80; died, March 3, of mitral regurgitation and acute nephritis.

Harlan Lewis Smith ✠ Sacramento, Calif.; Northwestern University Medical School, Chicago, 1932; aged 33; died, March 12, in the Sutter Hospital, of pneumonia.

John F. White, Leoti, Kan.; Missouri Medical College, St. Louis, 1898; county coroner; aged 79; died, March 13, in the Scott City (Kan.) Hospital, of pneumonia.

Thomas W. Smith, Eutaw, Ala.; Kentucky School of Medicine, Louisville, 1894; aged 65; was found dead in bed, March 21, of a self-inflicted bullet wound.

Emily F. Swett, Medina, N. Y.; Hahnemann Medical College and Hospital, Chicago, 1885; aged 82; died, March 27, of chronic myocarditis and arteriosclerosis.

Andrew La Roy Randall, Pleasanton, Neb.; Northwestern University Medical School, Chicago, 1903; aged 59; died suddenly, March 14, of coronary thrombosis.

Adolphe Tircuit, New Orleans; University of Louisiana Medical Department, New Orleans, 1878; aged 84; died, March 24, of sclerotic heart disease.

John C. Stevens ✠ Harrisburg, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1888; aged 72; died, March 26, of hemiplegia.

Henry Davis Rothgeb, Willow Springs, Mo.; University of Louisville (Ky.) Medical Department, 1896; aged 69; died, March 29, of cerebral hemorrhage.

Edward August Renfer, Berwyn, Ill.; Hahnemann Medical College and Hospital, Chicago, 1905; aged 55; died, April 1, of coronary thrombosis.

James Ratchford Taylor, Anniston, Ala.; Atlanta (Ga.) Medical College, 1898; aged 76; died, March 12, at the Garner Hospital, of bronchopneumonia.

Paul Thomas Logue, Fairbank, Iowa; Hahnemann Medical College and Hospital, Chicago, 1897; aged 66; died, March 9, of coronary occlusion.

William F. Walker, Colwich, Kan.; Missouri Medical College, St. Louis, 1884; aged 79; died, March 30, of acute catarrhal jaundice.

Bureau of Investigation

SLIM, CORRECOL AND HAUSER POTASSIUM BROTH

Three Concoctions Exploited by Modern Health Products, Inc., and Recommended by Bengamin Gayelord Hauser, Sold Under False and Fraudulent Claims, According to Food and Drug Administration

Three concoctions, "Slim," "Correcol" and "Hauser Potassium Broth," exploited by the Modern Health Products, Inc., of Milwaukee and recommended by Bengamin Gayelord Hauser (Bureau of Investigation, THE JOURNAL, April 17, 1937, p. 1359), have been declared by the Food and Drug Administration misbranded and sold under false and fraudulent claims.

Hauser Potassium Broth, "the only product of its kind recommended by Bengamin Gayelord Hauser . . ." and declared to be "the triumph of two years of scientific research by Bengamin Gayelord Hauser and associated experts . . ." by Modern Health Products, Inc., was reported by the government to consist essentially of a mixture of ground dried plant materials, including seaweed, alfalfa leaves and stems, okra, potato starch, beet leaves and rhubarb leaves. This conglomerate mixture was sold to Hauser enthusiasts as "a blessing for those health-seekers finding it difficult to secure or prepare a regular supply of fresh vegetables. To them, Hauser Pot.. sium Broth is little short of a miracle!"

While this concoction may have been a "miracle" to the Hauser health-seekers, the Food and Drug Administration took an entirely different view, declaring that the article was misbranded and that the package bore a false and fraudulent representation regarding the curative or therapeutic effect of the product. According to the advertising, "Potassium Broth is now almost as famous as Hauser himself. . . . Family size $2.50."

Slim, "The English Reducing Beverage," was declared adulterated and misbranded and sold under false and fraudulent claims. Slim was alleged to be adulterated in that it contained deleterious ingredients; namely, senna, bladderwrack and buckthorn bark. This product was also recommended by "food chemist" Hauser (6-ounce can, $1).

Slim was alleged by the government to be misbranded in that a leaflet accompanying the package carried the statement: "Slim contains no drugs and is absolutely harmless." This statement, the Food and Drug Administration held, was false and misleading, since the product consisted essentially of cathartic drugs and was not absolutely harmless. Just how Modern Health Products, Inc., reconciled the statement that Slim contained no drugs with the fact that it did contain laxative drugs is something that perhaps only naprapath Hauser could explain.

Correcol, the third product of the trinity seized by the federal authorities, was alleged to be misbranded in that the statement on the package "Colon Food" was false and misleading, since the article was not a food, and the package bore false and fraudulent representations regarding the product's curative or therapeutic effect. According to the Food and Drug Administration's report, Correcol consisted largely of Lallemantia royeleana (a mucilaginous weed) and a smaller quantity of karaya gum.

Correcol was advertised by Modern Health Products, Inc., as a new wonder food from the Orient for correcting constipation and was alleged to be "a simple, natural substance producing in the intestine a soft, jelly-like mass that sweeps away delayed waste, tones the muscular action and helps re-educate the colonic function back to normal." This reeducating wonder from the Orient was also approved by "the world-famous authority on dietetics," Bengamin Gayelord Hauser.

The cases involved interstate shipments of 119 packages of Slim, 95 packages of Correcol, and 146 packages of Hauser Potassium Broth. The libel praying seizure and condemnation was initiated by the United States attorney for the District of Massachusetts, based on reports by the Secretary of Agriculture. On June 8, 1936, no claimant having appeared, judgment of condemnation was entered and it was ordered that the products be destroyed.

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE: The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the composition; (4) the type of nostrum; (5) the reason for the charge of misbranding and (6) the date of issuance of the Notice of Judgment—which may be considerably later than the date of the seizure of the product.]

Fahrney's Liniment.—D. Fahrney & Son, Hagerstown, Md. Composition: Essentially turpentine oil and a sulfureted fatty oil. Fraudulent therapeutic claims.—[*N. J. 24060; November, 1935.*]

Kohler One Night Cough Syrup.—Kohler Mfg. Co., Baltimore. Composition: Morphine sulfate and cannabis (both habit-forming drugs) and another dangerous substance, an antimony compound. Fraudulent therapeutic claims.—[*N. J. 24063; November, 1935.*]

Navajo Indian Herbal Teas.—Navajo Industries Co., Inc., and Paul Anacker (alias Dr. Yosmite Nabona), no address given. Composition: The "asthma tea" was essentially cut, dried herbs including elder flowers and coltsfoot; the tea for hardening of the arteries was essentially cut, dried herbs including yarrow and horsetail; the one for neurasthenia was cut, dried herbs including camomile, lavender and mint; the one for stomach catarrh was cut, dried herbs including yarrow, camomile, centaury and mint; the one for stomach trouble was essentially cut, dried herbs including camomile, elder, yarrow and mint. Fraudulent therapeutic claims. —[*N. J. 24049; November, 1935.*]

Old Country Dia-san.—Alfred A. Hofmann, trading as the Original Old Country Remedy Co., no address given. Composition: A coarse mixture of plant material including bearberry leaves, licorice root, peppermint leaves, buchu leaves, horsetail stems, corn silk and anise seed. For Bright's disease, rheumatism, diabetes, gout, etc. Fraudulent therapeutic claims.—[*N. J. 24040; November, 1935.*]

Pankoka.—Pankoka Health Foods, Inc., New York. Composition: Chocolate, sweetened and flavored. For catarrh, influenza, dyspepsia, rheumatism, diabetes, tuberculosis, etc. Fraudulent therapeutic claims.—[*N. J. 24041; November, 1935.*]

Nunn's Black Oil Healing Compound.—Dr. Nunn's Black Oil Co., Inc., Salt Lake City. Composition: Mineral oil and a fixed oil containing a sulfur compound. For sores, scratches, colic, piles, etc. Fraudulent therapeutic claims.—[*N. J. 24046; November, 1935.*]

Mild-O-Line.—John F. Class, Inc., Dayton, Ohio. Composition: Essentially mineral oil and small amounts of salicylic acid and volatile oils, including those of eucalyptus and wintergreen. Not appreciably germicidal. Fraudulant therapeutic claims.—[*N. J. 24057; November, 1935.*]

Browns Food Lax.—Nostane Products Corp., Brooklyn. Composition: Essentially agar agar and several species of plantago seed. For "new energy and health," constipation, headaches, etc. Fraudulent therapeutic claims. Not a food, as represented.—[*N. J. 24064; November, 1935.*]

Correspondence

DIET AND COMMON COLDS

To the Editor:—An editorial comment published in THE JOURNAL, May 15, page 1718, concerning the relation of diet to common colds, may leave the impression on many readers that unwarranted views published by me in 1928 (*Science* **68**:301 [Sept. 28] 1928) were again completely abandoned by 1934 (Salt Water and Health, Chicago, a privately printed pamphlet). While it is true that the specific idea of using a high fat diet as a preventive of colds was abandoned, the basic idea that nutritional edema increased, and dehydration decreased, the susceptibility to contracting colds was by no means abandoned. In fact, the conviction was expressed in 1934 that edematous states were also the basis of other manifestations of subnormal health and to date this view has not been changed.

Another impression that the comment in THE JOURNAL may leave is that no confirmatory evidence concerning a relation between diet or nutritional hydration and the incidence of common colds has been published by others. It must be admitted that much more evidence has been published since 1928 to support the theory of infection as an explanation of the incidence of colds, and the possibility that infection may be a complicating factor in colds was also referred to by me in 1928 (*Proc. Soc. Exper. Biol. & Med.* **25**:454 [March] 1928). However, even granting that colds are now definitely proved to be caused by infection, this does not explain the observed variations in susceptibility. That diet or nutritional hydration may explain the variability in susceptibility to colds or other respiratory infections has been pointed out by McQuarrie (*J. Nutrition* **2**:46 [Sept.] 1929), Higgins (*New England J. Med.* **203**:145 [July 24] 1930; abstr. THE JOURNAL, Sept. 13, 1930, p. 826) and Paton (*Edinburgh M. J.* **39**:556 [Sept.] 1932; London Letter, THE JOURNAL, Oct. 29, 1932, p. 1521; *Brit. M. J.* **1**:738 [April 29] 1933).

I am not responsible for the specific use of my views made by Consumer's Research. Certainly the suggestion was never made that the use of fruit juices should be restricted. Even the high fat diet described in 1928 allowed about 500 calories to be derived from carbohydrates, which were intended to prevent ketosis. This diet was abandoned in 1934 largely because the restriction of carbohydrates to about 500 calories, together with the use of liberal amounts of fat, eventually often left the experimenter with a sense of extreme fatigue. Hence I adopted a diet containing less fat and more like the "antiretention" regimen outlined by Földes (A New Approach to Dietetic Therapy, Boston, Richard G. Badger, 1933). However, observations made since 1934 suggest that an entirely satisfactory dietary regimen for keeping the hydration of the organism at a low level or for preventing abnormal degrees of hydration over prolonged periods still remains to be discovered.

FREDERICK HOELZEL, Chicago.

POLYSACCHARIDE TEST FOR PNEUMOCOCCUS TYPES

To the Editor:—In a recent article by Cecil (THE JOURNAL, February 27, p. 689) mention is made of the use of the specific polysaccharide substance of pneumococci in determining when a patient suffering from pneumococcic pneumonia had received sufficient serum, the test being negative when inadequate serum had been given.

I have been much interested in this procedure since reading the original articles on the work by Tillett and Francis in 1929 and since, especially the report of Francis (*J. Exper. Med.* **57**:617 [Aug.] 1933) and that of Abernethy (*New York State J. Med.* **36**:627 [April 15] 1936). I do not find the polysaccharide antigens listed in the catalogues of any biologic houses and have been told by a salesman of one such house that in actual practice the use of the skin test with the specific soluble substance of the pneumococcus in determining the amount of serum which should be given was found impracticable and unreliable.

I should like to inquire whether this is correct and whether the procedure has been used extensively as yet. I have not heard of its being used in this vicinity. Also, where can the specific polysaccharides for the different pneumococcus types be obtained?

T. F. JUDEFIND, M.D., Loma Linda, Calif.

[This letter was referred to Dr. Cecil, who replies:]

To the Editor:—The correspondent is correct when he says that at the present time polysaccharides are not being offered to the medical public by any of the biologic manufacturers. However, the Lederle Company is planning to make it and probably by next fall these various antigens for pneumococcus skin tests will be put on the market by the Lederle Company. The test has not been used extensively as yet and I believe that it requires some experience on the part of the operator in reading the reactions accurately.

RUSSELL L. CECIL, M.D., New York.

INHERITANCE OF HEMOPHILIA

To the Editor:—As the explanation of inheritance of hemophilia in THE JOURNAL, May 1, page 1564, does not seem quite complete, I am offering the following comment: In man, sex is determined by the X and Y chromosomes. The male has one X and one Y chromosome and the female two X chromosomes. Hemophilia is due to a gene carried in the X chromosome and is recessive to the normal. The X chromosome of the male comes from the mother and the Y chromosome from the father. Consequently, hemophilia in the male must be transmitted by the mother. Women rarely, if ever, have the disease, although normal females may transmit the gene to their sons.

GEORGE HAINES, PH.D., Washington, D. C.
Office of Experiment Stations.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

BLOOD GROUPING TESTS

To the Editor:—I should like some references concerning the technic of doing the blood grouping tests when the M and N factors are concerned. These tests are to be used in conjunction with the ordinary blood grouping tests involving the A and B factors in the exclusion tests of paternity in bastardy proceedings. Are the agglutinating serums for the M and N factors manufactured and put on sale by any of the reliable drug concerns as yet?

BENJAMIN VICTOR DI IORIO, M.D., Utica, N. Y.

ANSWER.—The technic of testing for the factors M and N may be found in the original article by Karl Landsteiner and Philip Levine (*J. Exper. Med.* **47**:757 [May] 1928), also, Wiener, A. S.; Zinsher, Rebecca, and Selkowe, Joseph: *J. Immunol.* **27**:431 [Nov.] 1934, and Wiener, A. S.: Blood Groups and Blood Transfusion, Springfield, Ill., C. C. Thomas, 1935, chapter 11. Any one who wishes to make the tests for M and N for applying the results in paternity proceedings must first make a thorough study of the technic in order to familiarize himself with the various pitfalls and sources of error. Even when potent serums are available, incorrect typings result in inexperienced hands. As yet, testing serums for M and N are not available commercially in this country. However, there is no question that any of the workers in the field will be glad to help any investigator who is seriously interested in the subject to get started in any studies he may wish to make.

One of the first requisites is to have available at all times persons of known types M, N and MN, whose blood can be used as controls whenever tests are made. From the reactions given by such controls one can judge the potency and specificity of the serums being used, and if the serums are found to have deteriorated they must be discarded. Moreover, since individual serums vary somewhat in potency and other properties, it is imperative in paternity cases to do the tests with at least two and preferably three reagents of each sort. This is not practicable unless the investigator prepares his own immune serums and testing fluids so that he always has an adequate supply of potent serums on hand. In addition, duplicate blood suspensions should be taken from each person and each tested separately, so as to guard against nonspecific agents, which may alter the properties of the blood suspensions.

EFFECTS OF DUST ON LUNGS

To the Editor:—What is the effect on the bronchi and lungs by concentration of dust to which one may be subject in handling corn, barley, oats and wheat? Would the irritation caused by such dust lower the local resistance of the respiratory epithelium and be a factor in causing pneumonia? Please give references to papers that will give information with regard to the industrial hazard of organic dust which occurs in grain elevators, flour mills and shoe factories. Please omit name.

M.D., Missouri.

ANSWER.—In high concentrations, no dust is entirely harmless to the respiratory tract. Compared with the action of silica, dust from barley, wheat, corn and oats is relatively insignificant. Nevertheless these vegetable dusts long have been associated with abnormal instances of pneumonia, bronchitis and emphysema. A few publications refer to a fibrotic disease attributed to flour of various types. Such a condition, however, is not well authenticated. In an earlier period, milling operations were associated with disease states to a greater extent than at present, owing to the introduction of automatic machinery, dust arresters and generally improved work conditions. In addition to slight mechanical irritation on the respiratory tract, which is reported to predispose to bacterial invasion, it is recognized that fungi mixed with grain materials may lead to fungal infection of the respiratory tissues. The latter is more commonly associated with the handling of grains than with the handling of flour itself. For a long time the term "millers' asthma" has appeared in the literature. The exact nature of this disease is not known, nor is the anemia so prevalent among bakers associated with any particular agency connected with flour or grains. It is now believed that a protein fraction of flour and other grain products may be the direct source of some pulmonary diseases among exposed persons. Lately Prausnitz (Investigations on Respiratory Dust Disease in Operatives in the Cotton Industry, Special Report Series 212, Medical Research Council, London, H. M. Stationery Office, 1936) has traced certain pulmonary diseases among cotton workers to the protein fraction of the cotton.

An analogous situation exists with respect to flour and other vegetable dusts, but precise proof is lacking or incomplete. Kober and Hayhurst (Industrial Health, Philadelphia, P. Blakiston's Son & Co., 1924) say: "The inhalation of flour dust, in spite of the smooth and less irritating character of the individual particles comprising it, cannot fail to prove injurious to the respiratory organs. Indeed there is much reason for assuming that the lodgment of flour dust in the minute ramifications of the bronchial tubes and air vesicles, apart from clogging up the air passages and acting as an irritant, may result in collapse of a small area of the lung (atelectasis) or in a dilatation of the vesicles and an abnormal collection of air in the lung tissue, technically called emphysema and popularly known as 'millers' asthma.' Other diseases of the lungs are even more common. According to Hirt, 20.3 per cent of all the diseases affecting millers are pneumonia, 9.3 per cent bronchial catarrh, 10.9 per cent consumption and 1.9 per cent emphysema, a total of 42.4 per cent from diseases of the respiratory passages."

According to the Encyclopedia of Occupation and Health (International Labor Office, Geneva, 1930) "L. Ferrannini studied in 1912 the action of flour inhaled by millers. Although flour is generally considered to be innocuous to the respiratory tract, nevertheless there are writers, especially in past times, who have considered it to be the cause of bronchopulmonary troubles. Thus, for example, Ramazzini speaks of cough, asthma and anemia which he found among millers; Hirt, of respiratory affections; Ascher, of bronchopulmonary lesions; Seiffert, of nasal and pharyngeal lesions; Schuster, of the frequency of pulmonary tuberculosis; Muller, of lesions analogous to those due to pneumonoconioses."

The figures quoted are regarded as somewhat old and scarcely applicable at the present time. In addition to the publications mentioned, some material dealing with the situation may be found in "Industrial Dusts," by Drinker and Hatch (New York, McGraw-Hill Book Company).

DIAGNOSIS OF GONORRHEA

To the Editor:—I am writing to inquire whether an absolute diagnosis of gonorrhea can be made with Loeffler's methylene blue stain. I have been told that it can be differentiated only by culture. I have noted on two routine smears taken of patients in the hospital that they showed both intracellular and extracellular diplococci in groups in virgins without symptoms. What other organism may produce an acute urethritis resembling gonorrhea in all its characteristics? I have now a young married couple both of whom show symptoms resembling gonorrhea. Smears show intracellular and extracellular diplococci yet both state that there has been no previous venereal history and both deny clandestine intercourse. They have a child 2 years old. It is my opinion that this is a nonspecific condition perhaps from an endocervicitis following the trauma of delivery. Please omit name and address. M.D., Ohio.

ANSWER.—An absolute diagnosis of gonorrhea cannot be made with Loeffler's methylene blue stain or even with the much more valuable Gram stain. The methylene blue stain reveals only the size and morphology of the intracellular and extracellular cocci. Neisseria intracellularis (meningococcus), Neisseria catarrhalis, Neisseria sicca and Neisseria flava may closely resemble one another in smears. They are all gram negative. There are also a number of gram-positive cocci which have a similar appearance but do not concern us here.

For the usual examination of smears for gonococci the Gram stain should be used. In urethral smears gram-negative diplococci, coffee bean shaped, may be considered positive for gonococci whether intracellular or extracellular. In smears from the cervix and the vagina only the typical intracellular organisms are to be considered positive unless confirmed by culture and special tests, since other micrococci are often present.

The tests of greatest value are cultures on appropriate mediums, reactions on carbohydrate mediums, the alkali solubility test and the gonophage test.

In a Gram stain of exudate from acute cases gonococci appear in small clusters in the pus cells, and there is often a clear zone around the cocci. In chronic cases the organisms tend to disappear from the mucous surfaces and to localize in the small mucous glands. They are soluble in alkali and hence tend to disintegrate in alkaline mucus. From a Gram stain one should report the presence or absence of gram-negative intracellular or extracellular diplococci. The presence of gonococci should not be reported unless confirmed by culture and special tests. This is important in medicolegal cases.

The culture mediums often used are ascitic glucose agar, ascitic fluid agar, Gradwohl special ascitic fluid hormone bromcresol purple agar, and calf brain veal broth agar. Growth is more abundant in an atmosphere containing an increased amount of carbon dioxide (about 10 per cent).

The alkali solubility test is performed as follows: Wash the pure culture with physiologic solution of sodium chloride. In a small test tube place equal parts of suspension and tenth-normal sodium hydroxide solution and shake well. Gonococci dissolve quickly and the fluid becomes clear. Other confusing bacteria do not dissolve. The meningococcus is partly dissolved but leaves a slight opalescence.

Characteristics of Neisseria

	Growth on Plain Agar	Growth at 22 C.	Fermentation with Acid Formation			
			Dextrose	Maltose	Levulose	Sucrose
Neisseria gonorrhoeae	—	—	A	—	—	—
Neisseria intracellularis ...	—	—	A	A	—	—
Neisseria catarrhalis	+	+	—	—	—	—
Neisseria sicca	+	+	A	A	A	A
Neisseria flava	—	—	A	A	A	—

Old cultures that have become autolyzed contain a bacteriophage that is specific. This causes lysis of the organism after five hours or more.

From time to time cases of nonspecific purulent urethritis are seen in the male. It is this type which requires a culture diagnosis. The forensic physician must be sure of his ground, as gram-negative diplococci in the male or female are not necessarily gonococci. Some cases of vaginitis in children are due to gram-negative streptococci instead of gonococci. In any doubtful case the patient should be taken to a competent bacteriologist for cultural studies.

The accompanying table presents the important characteristics of the various species of Neisseria.

SENSITIVITY TO FEATHERS AND DUST

To the Editor:—I have an asthmatic patient who suffers somewhat the whole year but to a greater degree from September to January. She reacted only to feathers and dust in about 300 tests. She has taken vaccine for feathers and dust for two years. She took a trip to New York weeks ago and felt fine, with no asthma, and the next day after returning home had an attack, which has been almost continuous since. What would you suggest? What kind of heat in the home would be best? The family has low pressure steam. Are the air conditioned attachments for a steam job satisfactory? Is filtered hot air heat better?

JOHN M. PRESSLY, M.D., Belmont, N. C.

ANSWER.—It would seem obvious that dust and feathers exist in New York as well as in North Carolina and that they might be identical in the two places. However, the patient may have in her home some dust peculiar to her environment, as dust from pet animals, ozite floor pads, clothing, foods or automobile equipment. The variety and origin of the allergens is almost limitless. There is a quotation that has been used by many medical commentators to the effect that, if a patient has symptoms in one town and not in another, the basic cause of the trouble lies not in the patient but in the city where the trouble occurred. There is a certain nervous imbalance in every person with allergic reactions. This should always be kept in mind. It may be that in the case cited the nervous imbalance occasioned by the environment is more important in the production of the asthma than is the sensitiveness to feathers and dust. To date there is nothing better in identifying an air-borne allergen than skin sensitization tests. Nevertheless, the results of the reactions must not be accepted as absolute proof with regard to the etiology of the allergic symptoms. Skin sensitization tests leave much to be desired. There is one way to prove clinically which factor is to blame for a systemic allergic reaction. One should start when the patient is symptom free and then bring the patient in contact with one article of food or material at a time. Detailed notes should be kept as to the patient's reactions. Such sleuthing requires infinite patience and time. The patient can do this unaided. Naturally, well humidified heat is the best, and any air conditioning attachment for steam heated buildings is at the present time unsatisfactory. Properly filtered hot air will be the most efficient form of heat, but at the present time, in spite of all advertising to the contrary, air conditioning of buildings is far from perfect, although tremendous advances are rapidly being made by commercial companies.

FORCEPS DELIVERY AND SQUINT

To the Editor:—A baby delivered by a moderately forceful forceps extraction was noted by the parents to have a "mark" at the lateral angle of the eyelid margins, which was assumed to be due to forceps pressure. This small pressure scar was called to the attention of the doctor twice within the year following delivery and was accepted as evidence of forceps pressure with some reservations. The baby developed normally and only an occasional squint was noted until at the age of about 1 year and 9 months the child was taken on a several thousand mile intensive automobile trip of three or four weeks' duration. Distances of 400 to 600 miles a day were driven. The child lost weight and was definitely fatigued by the trip. Immediately after this trip a premonitory convergent squint developed, which soon became a permanent monocular convergent squint involving the eye near the scar described. At operation about a year later there was declared to have been found quite a palsy of the lateral rectus muscle, and the question arose as to whether the squint was paralytic in type and secondary to forceps injury. The child, now 6 years of age, has had to wear fairly strong hyperopic and astigmatic corrective lenses. Of course, as described, this a typical case of concomitant squint; however, could forceps pressure have been a prime factor in the development of this delayed muscular palsy? How frequently is forceps injury assumed to be related to squint? Please omit name.

M.D., Salinas, Calif.

ANSWER.—The history is characteristic of a typical concomitant squint and it is highly improbable that the forceps delivery was related to the condition that developed twenty-one months later. As far as is known, there are no statistics showing any relationship between forceps delivery and the later development of a nonparalytic squint. The presence of the high hyperopia and the excessive fatigue of the automobile trip were probably sufficient to break the fine muscle balance that had held the eyes parallel up to that time, after which the usual course of such a squint was followed.

ARTIFICIAL FEVER TREATMENT OF NEUROSYPHILIS

To the Editor:—I have a patient with neurosyphilis and sent him over to a doctor in Omaha for heat treatment. The treatment is very hard on him and he is skeptical. He insists that I write you to know if this is the best treatment and if not what is. He is taking mapharsen and a bismuth compound at the same time. If you can give me any information on this treatment I would appreciate it. Please omit name.

M.D., Iowa.

ANSWER.—It is difficult to give an intelligent answer to this inquiry because of the meager data given. Neither is the treatment of neurosyphilis as simple as the inquiry would infer. The treatment of neurosyphilis varies greatly with the type of neurosyphilis manifested, the stage of the disease, and the age and the general condition of the patient. Experience has shown that routine treatment will materially help several of the different forms of the disease, while in the other resistant types fever therapy will often be of benefit; a certain few will continue to progress in spite of any therapeutic efforts. Fever treatment by either the electrical fever producing units or by malaria is difficult for the patient to endure, but the results usually warrant the patient's undergoing the ordeal, especially if his infection has shown a tendency to be resistant to routine treatment. From this brief inquiry it would appear advisable to urge the patient to follow out the regimen suggested by the Omaha physician, as it apparently offers the patient the best means of controlling the disease.

POSTERIOR DISLOCATIONS OF HIP

To the Editor:—Will you please send me information with reference to the incidence of posterior dislocations of the hip and the coincidence of posterior dislocation of the hip occurring in more than one patient involved in the same accident. If you have literature available discussing these topics, I would be pleased to have references. Please omit name.

M.D., New Jersey.

ANSWER.—Posterior dislocations of the hips are more frequent than any others in which that joint is involved, occurring about seven times as often as anterior dislocations. However, traumatic dislocations of the hip joint of any type are relatively infrequent. Until the last few years, when highway accidents have become more and more common, the incidence was given at about 2 per cent of all dislocations. While there are no entirely reliable statistics, the incidence of traumatic dislocations of the hip as compared with all dislocations is today nearer 5 per cent. No report has been found in which there was a description of this injury in more than one patient involved in the same accident.

Textbook discussions of traumatic posterior dislocation of the hip may be found in:

Key, J. A., and Conwell, H. E.: The Management of Fractures, Dislocations and Sprains, St. Louis, C. V. Mosby Company, 1934.
Speed, Kellogg: Fractures and Dislocations, Philadelphia, Lea & Febiger, 1928.

PAROXYSMAL LABYRINTHINE VERTIGO

To the Editor:—A married man, aged 38, has sudden attacks of violent retching, vomiting, nausea and vertigo of such severity that it is necessary for him to be led to a resting place. The attacks last three hours, after which time he recovers completely and is perfectly well until about six weeks later, when the same phenomenon is repeated. Physical examination, the blood Wassermann reaction, urine examination, blood pressure and the blood count are all entirely negative. The history is of no special importance except that there was a football injury to the back of the head twelve years previously. There was no fracture, but a slight concussion. Could you kindly help me in the diagnosis and treatment of this condition. Please omit name.

M.D., Pennsylvania.

ANSWER.—This man has paroxysmal labyrinthine vertigo. He should be examined in detail by a competent neurologist and otologist to determine the presence of organic disease of the brain, especially the auditory nerve, the vestibular nerve and the temporal lobe. One should look for cerebellopontile angle signs and symptoms. If no evidence of a neoplasm is found in these regions the following regimen is suggested: large doses of ammonium chloride, 1 Gm. three or four times daily with diminution of the salt intake. If after a trial of six months with this medication the paroxysms persist, one may consider the possibility of cutting the vestibular nerve intracranially. This nerve is cut on the side of the tinnitus aurium. If a neoplasm is found, neurosurgery is indicated.

TUBERCULOUS EPIDIDYMITIS

To the Editor:—A patient, aged 35, has had the left epididymis removed for tuberculous epididymitis, proved by smear and histologic study. The wound is healed. Repeated examinations of the urinary sediment reveal no pus or tubercle bacilli. The prostate, by rectum, is of normal size, and the expressed secretion contains a large amount of pus. This specimen showed no tubercle bacilli on stained smear. Neither seminal vesical is palpable. The patient is receiving heliotherapy. Should the opposite vas be divided and tied to prevent the epididymis on this side from becoming infected?

M.D., San Diego, Calif.

ANSWER.—As tubercle bacilli have not been demonstrated in expressed smears from prostate and vesicles, there is no evidence to prove that this organism is the cause of the infection at the bladder neck. Some, if not many, of the epididymal infections are hematogenous in origin, and tying off the vas would not necessarily prevent tuberculosis of the remaining epididymis.

DISCOLORATIONS OF SKIN

To the Editor:—Would you kindly tell me the best means of removing discolorations from the skin following injection of superficial varicosities. I have a patient whom I have treated for disfiguring varicosities of the skin. This has been followed by a brown pigment, which fades very slowly. I should like to know whether there is any way of hastening the removal of this discoloration.

J. B. KINNE, M.D., Aberdeen, Wash.

ANSWER.—An exact description of the method and substance employed for thrombosing the varicosities has not been furnished by the correspondent. Since it has been stated that the "brown pigment fades very slowly," it would seem that what were described as discolorations were probably hemorrhagic extravasations into the surrounding tissues and that the discoloration as described was caused by the deposit of blood pigments hemosiderin and hematin.

The normal absorption of the pigment will undoubtedly take its regular course in due time. As in the treatment of hematomas localized to other regions, hot fomentations and other forms of local heat applications may prove of some value in hastening the process.

PERSISTENT CHILLS OR EPILEPSY

To the Editor:—A man, aged 58, has been ailing for the past fifteen years with chills. There is no elevation of temperature accompanying these chills, which last for a period of one hour or more. I have tried various medicaments with little relief. The chills come on at any time of the day without regard to the weather. The patient at the present time is being treated by me for a duodenal ulcer. Is there any connection between these ailments? Please omit name.

M.D., Illinois.

ANSWER.—It is not probable that a patient should have chills over a period of fifteen years without accompanying fever or sweating. If the patient has not been under close or continuous observation, it is sometimes difficult to determine whether the patient has had a rigor or an epileptiform or a hysterical attack. The diagnosis of epilepsy is rendered easy if the patient loses consciousness during the shivering or if he gives a history of similar attacks on previous occasions. Epileptic attacks may be difficult to differentiate from rigors that are hysterical in origin. If the attack should be of the latter variety, the patient's face would be red, not livid and shrunken, as in the case of a true chill. The temperature would not be elevated, and there should be a history of previous hysterical manifestations.

There do not seem to be any recorded instances of the association of chills with duodenal ulcer.

BLEEDING AFTER COITUS

To the Editor:—A man, aged 40, has been complaining for the past five months of the passage of a considerable amount of blood immediately following intercourse. There is no bloody discharge at any other time and no history of gonorrhea or syphilis. Treatment to date has consisted in massage of the seminal vesicles, instillation of 0.5 per cent silver nitrate into the prostatic urethra and some restriction of the frequency of coitus. None of these measures have benefited the patient any. I should like to have any suggestions you might have to offer as to diagnosis, treatment and prognosis. Please omit name.

M.D., Pennsylvania.

ANSWER.—In all probability this patient suffers from either a chronic prostatitis or a chronic seminal vesiculitis or both. The patient, of course, should be examined with the cystoscope to rule out the possibility of stone, tumor or other lesions in the bladder that might cause bleeding. The prognosis is favorable. With regard to treatment, massage of the prostate and seminal vesicles at weekly intervals is indicated. Instillations of silver nitrate had best be omitted. The restriction of the frequency of coitus is a correct procedure. Internally it might be well to give the patient 0.65 Gm. of potassium iodide three times a day with a glass of water, after meals.

PANCREATIC CALCULI

To the Editor:—A man, aged 56, an automobile mechanic, had severe cramplike pains over the epigastrium for three weeks, sharpest three hours after meals, and over the left costal margin. He then passed a cupful of calculi and the pain ceased. The stones were of calcium, phosphate and carbonate. No bile coloring matter was found. They were up to half an inch in diameter. Can these stones be pancreatic in origin? The treatment seems to be surgical or dietetic. The dietetic treatment seems to aim to reduce pancreatic secretion. As the cause of these stones is given as obstruction or decreased secretion, should not this diet be such as to increase pancreatic secretion? Please omit name.

M.D., California.

ANSWER.—The stones as described correspond in composition to pancreatic calculi. To prevent their formation, increasing the flow of pancreatic juice is indicated. This may best be accomplished by frequent feedings (six meal plan) and the drinking of an abundance of water. If there is hypochlorhydria, the administration with meals of diluted hydrochloric acid may be indicated. Pilocarpine nitrate has also been given with the intention of increasing the flow of pancreatic juice. The dosage (0.005 Gm. more or less) would, of course, have to be kept below the point of making the patient uncomfortable by salivation, diaphoresis or nausea.

SIGNS OF PULMONARY EMBOLISM SEEN IN AUTOPSY

To the Editor:—How often after death from pulmonary embolus will evidence of the embolus and its resultant effects be found in the lung at autopsy done within twenty-four hours of the time of death? Is it possible to have sudden death from pulmonary embolus and not find at autopsy within twenty-four hours any evidence in the lung?

WILLIAM B. SMITH, M.D., Wethersfield, Conn.

ANSWER.—It is not conceivable that sudden death from pulmonary embolism can take place without detectable evidence of its occurrence at necropsy within twenty-four hours of death. In cases of massive embolism of the pulmonary artery and its large branches, the changes in the lung tissue itself may not be marked, but there would be present in the arteries the embolus itself.

SENILE CATARACT

To the Editor:—Please advise me whether there is a calcium deposit in cataracts and if a milk or cheese diet is detrimental.

CARLETON DEEDERER, M.D., Miami, Fla.

ANSWER.—Calcium is one of the constituents of the ash of the normal lens. Its amount is exceedingly small but is considerably increased in senile cataract (Collins and Mayou: Pathology of the Eye, p. 624). If simple senile cataract is the type in question, it may be stated that there are no free calcium deposits in the lens but that the calcium is in solution in the tissues. Deposits of calcium in the form of plaques occur only in later degenerative forms. There is no reason to believe that a milk or cheese diet would be detrimental in the case of senile cataract.

LEAD POISONING IN CHILDREN

To the Editor:—I have a patient, a baby girl, who shows signs of lead poisoning. I have examined everything thoroughly that has been used in the preparation of her food and in the course of the investigation the rubber nipples were examined. I took roentgenograms of these nipples together with samples of several different kinds from the drug store and found that three or four cast heavy shadows but that the particular one used for this child cast the heaviest shadow. I am wondering whether you could give me any information regarding the use of lead in the making of nipples and also whether or not this could be considered as the cause of lead poisoning. A. L. ARNOLD JR., M.D., Owosso, Mich.

ANSWER.—Lead poisoning in children may be caused by ingestion of lead from various sources. Among the more common sources of lead poisoning are the enamel from cribs, painted furniture and toys with which the infant comes in contact. Licking painted walls is another source of lead poisoning.

While sulfur and other chemical elements are employed in the processing of rubber, lead is usually employed only in the rubber gloves and aprons that are used as protection in x-ray work. The rubber nipples mentioned in the query might be sent to a chemist and tested for lead, or the manufacturers might be interrogated as to the use of lead molds or any lead employed in the processing of the nipples.

Perhaps another careful history would reveal a source other than the rubber nipples from which the baby might have contracted the lead poisoning.

PSYCHOSIS IN IDENTICAL TWINS

To the Editor:—In a hospital at the present time are identical twin sisters, aged 27, one single and one married, showing a general manic type of psychosis, with schizophrenic coloring in the single sister. I am interested in knowing the incidence of psychosis in identical twins. I would appreciate it very much if you could give me the statistics on this or tell me where I might be able to find them. The married sister had the first attack a year ago. The married sister entered the hospital two months following the entry of the single sister and with a complication of bronchopneumonia. J. W. DOUGHTY, M.D., Sedro-Woolley, Wash.

ANSWER.—There is some evidence that, on the whole, mental disorders are somewhat more common among twins, especially monozygotic, than among singly born persons; but it is not likely that manic-depressive psychoses, in particular, are more common among them. Not many studies of mental disorders in twins have been made, although it was pointed out in the seventies of the last century, by Francis Galton, that researchers on twins should shed much light on the hereditary factors in human temperament and in the etiology of constitutional mental disorders. A discussion of this matter, together with a selected list of references, is given by Rosanoff, A. J.; Handy, L. M., and Plesset, I. R.: The Etiology of Manic-Depressive Syndromes with Special Reference to Their Occurrence in Twins, *Am. J. Psychiat.* **91**:725 [Jan.] 1935.

LEAD TREATMENT IN CANCER

To the Editor:—I was told a few days ago that in cases of inoperable malignant growths, especially the sarcomas, there is a method of treatment by means of lead poisoning. The physician who was telling me this was not certain of the details but said he had read an article recently. As I have a patient with inoperable fibrosarcoma, who is suffering a fair amount of pain, and as I do not remember reading anywhere of any such treatment as giving lead by injection beyond the point of tolerance and then treating for the ensuing plumbism, all this with the view of ameliorating and causing regression of the malignant growth, would you please enlighten my ignorance. Please omit name. M.D., New York.

ANSWER.—The use of lead preparations in the treatment of cancer has been generally abandoned. The administration of lead selenide was advocated some years ago as a less toxic product. These agents have not proved their value in the treatment of cancer and should not be generally employed. In view of their toxicity, their use is justified only on an experimental basis in the large clinics where the investigation can be carefully controlled. Even under these conditions their use is questionable.

CHRONIC PROSTATITIS

To the Editor:—I have a case of nonvenereal chronic prostatitis showing little or no hypertrophy at present, clinically free from symptoms except for pus cells in the secretion following massage. What should I advise the patient as to moderate sexual intercourse? What danger of infection is there to the woman? Please omit name. M.D., Massachusetts.

ANSWER.—If it has been proved that the gonococcus is not present in the pus obtained from the prostate, there is no danger of infection to the woman.

Sexual intercourse sometimes has a tendency to stir up these cases.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL, June 12, page 2066.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* June 21-23 and Sept. 13-15. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF INTERNAL MEDICINE: *Written examination* will be held in different centers of the United States and Canada in October. Chairman, Dr. Walter L. Bierring, 406 Sixth Ave., Rm. 1210, Des Moines.

AMERICAN BOARD OF OPHTHALMOLOGY: Chicago, Oct. 9. *All applications and case reports, in duplicate, must be filed at least sixty days before the date of examination.* Sec., Dr. John Green, 3720 Washington Blvd., St. Louis, Mo.

AMERICAN BOARD OF SURGERY: *Part I (written),* Sept. 20. Sec., Dr. J. Stewart Rodman, 225 S. 15th St., Philadelphia.

AMERICAN BOARD OF UROLOGY: *Oral examination.* Minneapolis, June 25-26. Sec., Dr. Gilbert J. Thomas, 1009 Nicollet Ave., Minneapolis.

New York Endorsement Report

Mr. Herbert J. Hamilton, chief, Professional Examinations Bureau, reports 122 physicians licensed by endorsement from Jan. 1 through March 9, 1937. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
University of Arkansas School of Medicine		(1935)	N. B. M. Ex.
University of Colorado School of Medicine		(1931)	Colorado
Georgetown University School of Medicine	(1935, 2) N. B. M. Ex., (1935) New Jersey	(1934)	Maryland,
Howard University College of Medicine		(1924)	Dist. Colum.
Northwestern University Medical School		(1905)	N. Dakota
Rush Medical College		(1934)	N. B. M. Ex.
University of Illinois College of Medicine		(1931)	Illinois
Indiana University School of Medicine		(1932), (1936)	Indiana
State University of Iowa College of Medicine	(1934), (1935) Iowa	(1933),	
University of Louisville Medical Department		(1894)	Penna.
Johns Hopkins University School of Medicine	(1933) Maryland, (1930) N. B. M. Ex., (1934) North Carolina	(1928),	
University of Maryland School of Medicine and College of Physicians and Surgeons		(1930), (1931), (1934)	Maryland
Harvard University Medical School	(1930), (1933), (1934) N. B. M. Ex.	(1926)	Ohio,
Tufts College Medical School		(1932)	N. B. M. Ex.
University of Minnesota Medical School		(1928)	N. J., (1936) N. B. M. Ex.
Albany Medical College		(1933), (1935, 2)	N. B. M. Ex.
Columbia Univ. Col. of Physicians and Surgeons	(1933), (1934) N. B. M. Ex.	(1932, 2),	
Cornell University Medical College		(1933), (1934), (1935)	N. B. M. Ex.
New York University, University and Bellevue Hospital Medical College		(1933)	New Jersey, (1934) N. B. M. Ex.
University of Rochester School of Medicine		(1935)	New Jersey
Eclectic Medical College, Cincinnati		(1935), (1936, 3)	Ohio
Ohio State University College of Medicine		(1921)	Ohio
University of Cincinnati College of Medicine		(1930), (1931)	Ohio
Hahnemann Medical Col. and Hosp. of Philadelphia		(1936)	Maryland
Temple University School of Medicine		(1933)	New Jersey
University of Pennsylvania School of Medicine	(1933) N. B. M. Ex.	(1924)	Penna.,
Woman's Medical College of Pennsylvania		(1935)	N. B. M. Ex.
Meharry Medical College		(1933), (1934)	Tennessee
Vanderbilt University School of Medicine		(1935)	Tennessee
Baylor University College of Medicine		(1934), (1936, 2)	Texas
University of Vermont College of Medicine		(1933), (1935)	N. B. M. Ex.
Medical College of Virginia	(1924), (1935) Virginia	(1933)	N. Carolina,
Medizinische Fakultät der Universität Wien	(1930)* Austria	(1926),	
Albert-Ludwigs-Universität Medizinische Fakultät, Freiburg		(1926)*	Germany
Albertus-Universität Medizinische Fakultät, Königsberg	New Jersey, (1920)* Germany	(1920)*	
Friedrich-Alexanders-Universität Medizinische Fakultät, Erlangen		(1916),*	(1925)* Germany
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin	(1919),* (1922, 2),* (1923, 2),* (1924),* (1926, 2)* Germany	(1914),*	
Georg August-Universität Medizinische Fakultät, Göttingen		(1921)*	Germany
Hamburgische Universität Medizinische Fakultät		(1922)*	Germany
Hessische Ludwigs-Universität Medizinische Fakultät, Giessen		(1922)*	Germany
Johann Wolfgang Goethe-Universität Medizinische Fakultät, Frankfurt-am-Main		(1922),*	(1924)* Germany
Julius-Maximilians-Universität Medizinische Fakultät, Würzburg		(1921),*	(1935)* Germany
Kaiser-Wilhelms-Universität Medizinische Fakultät, Strassburg		(1907)*	Germany
Ludwig-Maximilians-Universität Medizinische Fakultät, München		(1913),* (1922, 2),*	(1923)* Germany
Rheinische Friedrich-Wilhelms-Universität Medizinische Fakultät, Bonn		(1918)*	Germany
Schlesische-Friedrich-Wilhelms-Universität Medizinische Fakultät, Breslau		(1911),* (1912),*	(1922)* Germany

Universität Heidelberg Medizinische Fakultät	(1923),* (1931)*	Germany
Universität Leipzig Medizinische Fakultät	(1910),* (1919)*	Germany
National University of Athens School of Medicine	(1922)	Michigan
Magyar Királyi Erzsébet Tudományegyetem Orvostudományi, Pecs	(1926)*	Hungary
Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultasa, Budapest	(1915),* (1924)*	Hungary
Regia Università degli Studi di Bologna. Facoltà di Medicina e Chirurgia	(1935)*	Maryland
Regia Università degli Studi di Milano. Facoltà di Medicina e Chirurgia	(1927)	Italy
Regia Università degli Studi di Padova. Facoltà di Medicina e Chirurgia	(1934)	Maryland
Regia Università degli Studi di Roma. Facoltà di Medicina e Chirurgia	(1933), (1934),* (1935, 5)*	Maryland
Rijks-Universiteit te Leiden Faculteit der Geneeskunde	(1928)	Ohio
University of St. Andrews Conjoint Medical School, Scotland	(1935)*	New Jersey
Universität Bern Medizinische Fakultät	(1919)	Switzerland, (1934) Maryland, (1935) New Jersey
Odessa Medical Institute	(1921)*	New Jersey

* Verification of graduation in process.

Book Notices

Safe Childbirth: The Three Essentials. 1. Round Brim. 2. Flexible Joints. 3. Natural Posture. By Kathleen Olga Vaughan, M.B. With foreword by Howard A. Kelly, M.D., LL.D. Cloth. Price, $3. Pp. 154, with 49 illustrations. Baltimore: William Wood & Company, 1937.

The author's object in writing this book was to simplify the attendance on childbirth while making it a safer and easier process for both mother and child. She made a thorough study of the processes of labor among civilized, semicivilized and uncivilized people in many parts of the world. This investigation led her "to the conclusion that the essential factors which make for the safety of mother and child in every birth are the round pelvis, mobile pelvic joints, and the use of the natural posture for delivery. . . . These are all characteristic of the healthy woman to whatever race she belongs. . . . Difficult childbirth is not a matter of chance nor is it dependent on the will of Heaven, but it follows the violation of the fundamental laws of health." The author shows that the evils associated with childbirth which exist in civilized countries are due to improper training of girls in childhood, to the lack of sufficient sunshine, fresh air and proper exercise, to improper food and clothing, to bad habits during pregnancy and postural errors which prevent the necessary expansion of the birth canal during labor. The author maintains that a vegetarian diet is the natural one for pregnant women. She describes and illustrates exercises for pregnant women and the correct posture which should be assumed by women in the different stages of labor. She emphasizes that parturition and defecation are similar processes. The same muscles are used in the two, but in one the *vis a tergo* is the uterine muscle, in the other the intrinsic muscles of the intestine. In both cases they are aided by the abdominal muscles and by posture. The author feels confident that, if we would only adopt the natural posture during the birth of children, most of our troubles would disappear. Puerperal sepsis would soon be a thing of the past. Adopting the natural position during labor is, however, no cure for the oval pelvis and for stiff joints. The blame for these lies on the shoulders of those who brought the patient up, her mother above all, then her school. The two habits of civilization which destroy the natural shape of the pelvis are neglect of the squatting position for defecation and the wearing of high heels. For those interested in improving obstetrics this book will prove fascinating. It is well written and has many interesting illustrations.

Die Diät- und Insulinbehandlung der Zuckerkrankheit für Studierende und Ärzte. Von Dr. Franz Depisch. Mit einem Vorwort von Prof. Dr. N. v. Jagić. Paper. Price, 4.80 marks. Pp. 136, with 8 illustrations. Vienna: Julius Springer, 1937.

For the reader of German who wishes a brief yet thoroughly satisfactory treatise on diabetic therapy, this little book will afford great satisfaction. It is practical and based on the following consideration of underlying theory:

Diabetes is considered to be a condition in which the normal balance between the excretion of sugar by the liver and its utilization in the periphery is disturbed so that the former process predominates, sugar thereby rising in the blood and overflowing into the urine. The maladjustment between supply and utilization of blood sugar depends on disequilibrium between the activity of the insular mechanism and that of the regulators of blood sugar opposed to the insular mechanism. Such counterregulation is effected by the secretions of the adrenal and other glands as well as by the sympathetic nervous system. Certainly in the large majority of cases of diabetes and possibly in all cases the disturbance is primarily one of functional insufficiency of the islands; nevertheless the possibility exists of diabetes attributable exclusively to hyperactivity of the counterregulatory mechanism. Pure insulin insufficiency and pure hyperactivity of counterregulation represent extremes between which may be found all degrees of combination of the two. Insufficiency of insulin is not alone responsible in the average case of diabetes; the condition is influenced invariably by the state of the counterregulatory mechanism.

Treatment is adjusted accordingly. For cases in which insulin insufficiency predominates, preservative therapy is instituted. This is accomplished either by administering insulin or by limiting the intake of sugar formers (carbohydrate, protein), with dependence on fat to supply calories. Such a regimen has the disadvantage of being stimulating to the counterregulatory mechanism, but usually this is outweighed by the resulting increased efficiency of the insular mechanism; the disadvantage furthermore is overcome by gradual additions of carbohydrate to the diet after the urine has become sugar free. For cases in which hyperactivity of the counterregulatory mechanism predominates, more carbohydrate is given and the fat of the diet is simultaneously restricted. Illustrative cases are cited and dietary details are provided.

It commonly has been supposed that complete failure of the island mechanism is responsible for diabetic coma, but against such a view is the fact that the pancreas obtained from a patient dying in coma is found to contain appreciable amounts of insulin. It also is frequently observed that the doses of insulin necessary to overcome coma are many times those required for the control of the severest cases of diabetes not complicated by coma. The author is therefore led to the conclusion that intense overactivity of insulin antagonists must be largely responsible for the development of coma. This explanation not only accords with the facts opposed to the older supposition but harmonizes with the beneficial therapeutic effect in coma of fructose and dextrose, which exert a dampening effect on the activity of the counterregulators. The author suggests that benefit might be effected by paralyzing the innervation of the liver by means of paravertebral anesthesia. These theoretical considerations receive more complete discussion elsewhere (Depisch, Franz: Ueber die Theorie und Praxis der Behandlung des Diabetes, *Ergebn. d. inn. Med. u. Kinderh.* **48**:1, 1935).

Maternity and Post-Operative Exercises in Diagrams and Words. By Margaret Morris, C.S.M.M.G. In collaboration with M. Randell, S.R.N., S.C.M., T.M.M.G. (Twenty-One Exercises). Introduction to Maternity Exercises by Professor R. W. Johnstone, C.B.E., M.D., F.R.C.S.E. Introduction to Post-Operative Exercises by Professor John Fraser, M.C., M.D., F.R.C.S.E. Cloth. Price, $2. Pp. 152, with illustrations. New York: Oxford University Press, 1936.

In this book Margaret Morris illustrates and describes a series of twenty-one exercises for pregnant and puerperal women and women who have been operated on. Special attention is given to training in deep breathing and relaxation to establishing good posture. Prof. R. W. Johnstone observed the teaching of these exercises for a year at the Edinburgh Royal Maternity Hospital and he is of the opinion that the results are distinctly encouraging. Prof. John Fraser, who wrote the introduction to the section on postoperative exercises, is satisfied with the soundness of Miss Morris's scheme and believes that their application will yield most beneficial results. The author emphasizes that the book is intended primarily for masseuses, midwives and nurses who have taken the "maternity and post-operative exercise diploma" of the International Institute of Margaret Morris Movement and for students doing the two or three years' "teaching" or "remedial" training. The Margaret Morris movement is a method of physical and mental training that has evolved over a period of twenty-six years. There are now four main divisions of it, normal, medical, athletic and esthetic, but all are interrelated. The author also points out that it is not advisable to try to learn the exercises

which she illustrates and describes solely from the book. She cautions that the exercises should be carried out under medical supervision. The author is to be commended for the excellence of her drawings and the clarity of her descriptions. Nevertheless, as she herself says, one must take a prolonged course under her or one of her disciples in order to obtain the full benefits of the exercises described in the book.

Études neurologiques. Les myoclonies vélo-pharyngo-laryngo-oculo-diaphragmatiques—La maladie de Friedreich—Pathologie du névraxe. Par Georges Guillain, professeur de clinique des maladies du système nerveux à la Faculté de médecine de Paris, et Pierre Mollaret, médecin des hôpitaux de Paris. Seventh series. Paper. Price, 60 francs. Pp. 302, with 78 illustrations. Paris: Masson & Cie, 1936.

This book is the seventh of a series written by Georges Guillain on neurologic studies. In this edition Pierre Mollaret is co-author. All the material publication was studied and analyzed in the clinic at the Salpêtrière. It is divided into three parts: myoclonus of the palate, pharynx, larynx, eyeballs and diaphragm; Friedreich's ataxia; pathology of the cerebrospinal axis. Myoclonus of the palate and pharynx is discussed in detail with all the available literature to date. Not only are the clinical aspects given but the pathologic appearances are dealt with at considerable length. The authors feel the essential lesion to be briefly that concerning the dentate nucleus, the bulbar olive, posterior longitudinal bundle, superior cerebellar peduncle and the red nucleus. They have attempted rather successfully to place this syndrome in an orderly nosology, semeiology, pathology and physiology. The second part, dealing with Friedreich's ataxia, draws attention to a cardiac bulbar syndrome with alterations in the electrocardiogram as well as labyrinthine difficulties. All subgroups of the cerebellar degenerative syndromes are adequately discussed. The third part includes original studies on Pick's disease, pinealomas, infectious diseases of the central nervous system, torsion spasms and indications for cisternal and lumbar punctures. There is an excellent bibliography after each chapter. This book, like all the previous series, is highly recommended to all neurologists.

Childless: A Study of Sterility, Its Causes and Treatment. By Sam Gordon Berkow, M.D. Cloth. Price, $3. Pp. 307, with 9 illustrations. New York: Lee Furman, Inc., 1937.

This book will prove fascinating to the public for whom it was written, because it is easy to read and it contains a great deal of interesting information. However, little space is devoted to the actual causes and treatment of sterility, for the book is really a historical and philosophic treatise on the subject of sterility. It is divided into three parts, the first of which contains a discussion of our sterile civilization, social aspects, the second how we reproduce ourselves, biologic aspects, and the third the conquest of sterility. The last part occupies only thirty-one pages. Even in these only a small proportion is taken up with the actual discussion of the treatment of infertility. The author does not think much of artificial insemination and he particularly discourages the use of donor's semen for this purpose. He likewise and properly lacks enthusiasm for plastic operations on the tubes to overcome sterility. At the end of the book is an extensive list of references which even physicians will find useful.

Die Fermente und ihre Wirkungen. Von Prof. Carl Oppenheimer, Dr. phil. et med. Supplement. Lieferung 3 (Bd. I: Specieller Teil: Hauptteil 8, 9). Paper. Price, $6.80. Pp. 321-480. The Hague: W. Junk, 1936.

Die Fermente und ihre Wirkungen. Von Prof. Carl Oppenheimer, Dr. phil. et med. Supplement. Lieferung 4 (Bd. I: Specieller Teil: Hauptteil 9-12). Paper. Price, $6.80. Pp. 481-640, with illustrations. The Hague: W. Junk, 1936.

The continued compilation and abstracting of the rapidly accumulating literature on enzymes and their actions as presented by Oppenheimer in these supplements to volumes 1 and 2 of his monumental work Die Fermente, edition 5 (1935), should be welcomed by all workers in the field of enzymes. The last two supplements under consideration here cover heteroxidases in general and more specifically those acting on cardiac, uronic acid, and mustard oil glucosides. Polyase action is discussed in detail in conjunction with the modern conception of the structure of the polysaccharides. The preparation, characteristics and differential actions of the different types of amylases are presented fully, with briefer treatment on fructase, inulase, cytases, pectinases and cellulases. Under nucleases the controversial situation on the types of phosphatases necessary for the liberation of phosphoric acid from the plant and animal nucleic acids is presented. The more modern views on the mechanism of deaminization of amino acids and free and combined purines are properly emphasized. The complex problem of arginase activation is covered thoroughly. In connection with muscle chemistry, the new views on the possible action of a phosphaminase on creatine phosphate are timely. Urease is reviewed thoroughly. The proteases are treated only in part in supplement 4, being limited to the general discussion of the theoretical aspects of the possibility of specific unions other than peptide linkings between units in the protein molecules. The detailed discussions on pepsin, trypsin and erepsin will no doubt appear in later supplements. The terminology adopted by Oppenheimer appears rather unfortunate in part. This holds in particular for the old terms pepsin, trypsin and erepsin, which he refers to as pepsinase, tryptase and ereptase. The work is not only an excellent review on the enzymes proper but equally valuable on the structures of the polysaccharides and proteins and the products obtained from them at various stages of hydrolysis.

Nouveau traité de psychologie. Par Georges Dumas [editor], professor à la Sorbonne. Tome V, Fascicule 1: La perception. Par B. Bourdon, professeur honoraire à l'Université de Rennes. Paper. Price, 15 francs. Pp. 84, with 37 illustrations. Fascicule 2: Les opérations intellectuelles. Par H. Delacroix, doyen de la Faculté des lettres de l'Université de Paris. Paper. Price, 20 francs. Pp. 85-184. Fascicule 3: La croyance. La psychologie de la raison: Nature et fonction de l'intelligence. Par H. Delacroix, doyen de la Faculté des lettres de l'Université de Paris. Paper. Price, 20 francs. Pp. 185-304. Fascicule 4: Le temps et les souvenirs. Le rêve et la rêverie. Par H. Delacroix, doyen de la Faculté des lettres de l'Université de Paris. Paper. Price, 20 francs. Pp. 305-404. Paris: Librairie Félix Alcan, 1936.

These four pamphlets form the fifth volume of the rather massive treatise on psychology edited by George Dumas, who is one of the leading psychologists of France. The various authors also are authorities in their particular field, and the whole atmosphere of Dumas' complete study is one of scholarliness and careful summarization of known theoretical material. The first part of the volume deals with perception, and in general one can say that the point of view is quite modern but not, of course, clinical. Much more space is devoted here to the gestalt interpretation of perceptual ability than in any previous work of a similar nature. Perception is summarized from the standpoint of ability to assimilate various sensations and bring them together in a relationship. Much of the older material on the subject is retained, although a good deal of earlier experimental work and perception, which has been quoted extensively in American works, has been neglected. Much space has been devoted to illusions, as has been the custom, and this might well be justified, for in the study of illusions one does gain much understanding of the way in which sensory impulses are fused and integrated.

The part of this volume devoted to intellectual operations is again quite theoretical. It deals largely with such concepts as those of number and of language, the various laws of language, how expressions are phrased, and how intercommunication between individuals in the formation of various concepts are brought about. This section is probably more rational and philosophic than any other part of the volume.

In the third section, devoted to belief and the psychology of reason, one finds a good summary of our modern understanding of intelligence. There is a historical introduction and various points of view are taken up. Such factors as intelligence as a special trait and as a general factor running through the whole mind are carefully discussed. In addition, suggestibility, belief and knowledge, organization and structure of thought, and similar mental traits and capacities are discussed from the standpoint of the teaching psychologist. There is also included some explanation of intelligence as manifested by animals, but it is far inferior to the animal psychology that is now so much stressed in the United States.

The last part of the volume, devoted to time, memory and dreaming, again is a conglomeration of theory with a little practice. Much stress is laid on the interpretation of an individual's understanding of time and the theoretical concepts

of memory. The memory concept as discussed here is somewhat of an improvement on that of the early experimental psychologists, but it does not integrate modern American psychologic studies of mnemonics with the gestalt theory and animal experimentation, which offers some good explanations of memory and allied phenomena. In this part, however, are the two sections of most interest to the psychiatrist and practicing physician, a few pages devoted to amnesia and paramnesia, and there is also a section devoted to the interpretation of dreams. Both of these are much shorter than those currently found in psychoanalytic and psychiatric works, and the volume, while excellent for the teacher of theoretical psychology in the university, cannot be recommended for use by the medical profession except as background material.

The Baby and Growing Child: Feeding and Health Care for Physicians, Mothers, and Nurses. By Louis Fischer, M.D., Consulting Physician to the Willard Parker Hospital, New York City. Cloth. Price, $1.50. Pp. 260, with 30 illustrations. New York & London: Funk & Wagnalls Company, 1936.

Numerous simply written books and pamphlets are available for the guidance of mothers in the care of small children. This book is an average example of works of that kind. Most of the statements are correct and are calculated to instruct the mother, at the same time that an effort is made to prevent her from making diagnoses herself. A few of the statements are open to question, as, for example, "Shock, fright and sudden excitement during pregnancy may cause psychic disturbances in the newly born." On the whole, however, no harm could result from reading this book, and in many respects it is so simply written that any mother who can read at all could not fail to understand the purport of the material.

Lehrbuch der Krankenernährung. Herausgegeben von Prof. Dr. C. R. Schlayer und Dr. J. Prüfer, Augusta-Hospital, Berlin. Teil 1: Allgemeine und spezielle Diätetik. Bearbeitet von Chefarzt Dr. H. Delcher et al. Second edition. Cloth. Price, 8.50 marks. Pp. 283, with 3 illustrations. Berlin & Vienna: Urban & Schwarzenberg, 1937.

The second edition of this eminently practical book on dietetics followed the first so promptly that few considerable changes could be made; the chapter on reducing and fattening diets has been assigned to Grafe, well known for his researches on metabolic disorders. A new, interesting chapter on the hygiene of foodstuffs and kitchen utensils, prevention of food poisoning and related subjects has been contributed by Ziegelmayer. As dietetics is usually treated in medical schools in a stepmotherly manner, the handy booklet should be of interest not only to dietitians but to medical practitioners as well.

Medical Morals and Manners. By Hubert Ashley Royster, M.D. Cloth. Price, $2.50. Pp. 333. Chapel Hill, N. C.: University of North Carolina Press, 1937.

This contains some of the addresses and newspaper and magazine articles which the author, an eminent surgeon, has presented during forty years to various audiences. Many of them deal with matters affecting the mutual relations of the medical profession and the public. The subjects vary widely and include the dignity of medicine, muscle, the philosophy of surgery and a few biographic sketches. There is a good deal of charm in many of the essays, although, because of the varied audiences and varied times at which they were written, any cohesiveness is notably lacking. Absence of technical language makes for easy lay reading. The book may be recommended for those who like the philosophic approach to medicine and who have the time to spend in this manner.

Dietetics for the Clinician. By Milton Arlanden Bridges, B.S., M.D., F.A.C.P., Director of Medicine, Detention, Rikers Island and West Side Hospitals, New York. Third edition. Cloth. Price, $10. Pp. 1,05[illegible]. Philadelphia: Lea & Febiger, 1937.

The first edition was reviewed in THE JOURNAL in 1933. The appearance of the third edition in 1937 amply attests its popularity. The material is well organized and simply written. Revision is adequate. The most striking features of the book are its practicability and the ease with which material can be located through the table of contents or the index. The collaboration of various specialists adds greatly to its value. It should be on the shelves of all those who need to prescribe diets for various diseases.

Facts and Frauds in Woman's Hygiene: A Medical Guide Against Misleading Claims and Dangerous Products. By Rachel Lynn Palmer and Sarah K. Greenberg, M.D. Cloth. Price, $2. Pp. 311. New York: Vanguard Press, 1936.

The popularity of "100,000,000 Guinea Pigs," which exposed the sales methods and inordinate profits of widely advertised brands, has led to much imitation. The same methods are used here with regard to preparations designed entirely for women. Many of the well known nostrums, some of which have been exposed in the columns of THE JOURNAL, are again discussed in a popular vein. The facts on the whole are accurate, but the organization is poor. There could be some advantageous shifting of chapters and some improvement in the style. This book may serve to interest many women in obtaining more reliable information on their "personal hygiene" than that supplied through street car advertisements.

Report of the Medical Research Council for the Year 1935-1936. Paper. Price, 3s. Pp. 172. London: His Majesty's Stationery Office, 1937.

This report is largely a catalogue of the activities of the Medical Research Council for the fiscal year 1935-1936. The activities listed are both numerous and of impressive quality. It is, in fact, difficult to single out from this report any specific research activities of more immediate or ultimate significance than the others. The investigations of influenza at the National Institute for Medical Research concerning the transmission of the influenza virus to ferrets and man already have received wide attention. Considerable activity along nutritional lines is summarized in the report. The detailed results of many of the activities listed have been published, and others are appearing in the current literature at frequent intervals. The report deserves, and should receive, the careful attention of all those who exert any influence on the course of research in this country. Sections of the report are referred to also in the London letter that appeared in THE JOURNAL April 24.

The Comparative Feeding Values for Poultry of Barley, Oats, Wheat, Rye and Corn: A Review and Analysis of Published Data. Prepared for the Associate Committee on Grain Research of the National Research Council and the Dominion Department of Agriculture. By Earle W. Crampton, Associate Professor of Animal Nutrition, Macdonald College (McGill University), Quebec. Dominion of Canada, National Research Council, Report No. 29. Paper. Price, 25 cents. Pp. 50. Ottawa: J. O. Patenaude, I. S. O., 1936.

Professor Crampton reports data on the relative values of various grains for feeding chickens. The chief differences in nutritional value are due to the quality of the protein. Also the mineral and vitamin portions of the different grains are important. With proper supplements in the form of protein, salts and vitamins, the different cereal grains studied were about equal in feeding value for poultry. The author concludes that a mixture of two or more of the cereal grains is to be recommended over the use of any one grain alone.

Why We Do It: An Elementary Discussion of Human Conduct and Related Physiology. By Edward C. Mason, M.D., Ph.D., F.A.C.P., Professor of Physiology, University of Oklahoma School of Medicine, Oklahoma City. Cloth. Price, $1.50. Pp. 177, with 4 illustrations. St. Louis: C. V. Mosby Company, 1937.

This little book, written by a physiologist, is presented with the hope that it will help nontechnically trained persons to orient themselves to some extent in the field of practical psychiatry. It is intended to clarify, for the ordinary person, the principal motivations of his behavior. The author believes that man's behavior is affected almost entirely by three factors: the ego, sex and the herd. Unfortunately, even these objectives do not appear to be constantly in his mind. The result is a discussion often lacking in essential simplicity yet failing to reflect advanced thought in the field. More satisfactory books for laymen interested in this field are available.

Glycerine: Its Rôle in Medicine. By Milton A. Lesser, B.Sc., and John R. Murphy, M.D. Reprinted from the American Professional Pharmacist, June, July, August, 1936. Paper. Pp. 16. New York, [n. d.]

This pamphlet reviews the wide use of glycerin throughout the years during which it has been employed, either in pharmaceutical practice or as a therapeutic preparation. Glycerin is one of the really essential vehicles for many pharmaceutical preparations. For a booklet of this kind it is conservatively written, but here and there are some errors in description.

There are statements made concerning the medicinal use of glycerin that would be more critical if they were based on comparison with other forms of treatment. For instance, in the treatment of varicose veins glycerin has not received general acceptance. Discounting these details, however, the book may serve as a reference guide for compounding or manufacturing pharmacists. For prescribing physicians it may be of some value for casual reading.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Burn Following Fracture and Therapeutic Application of Heat.—The defendant, a physician, was called to treat a fracture of the arm of the plaintiff's 7 year old son. After he reduced the fracture and set the bone the patient's arm became swollen, and two days after the accident he was taken to the defendant's office. There the defendant placed a cloth over the injured arm and directed a nurse to apply a "heat lamp" for fifteen minutes. At the end of that time the defendant examined the arm and directed that the treatment be continued for fifteen minutes more. When the cloth was removed at the expiration of that period, the patient's arm or hand was found to be badly blistered. The defendant, the plaintiff claimed, rubbed his hand over the affected area and the skin came off, leaving the raw flesh exposed. Ten days later, the patient developed scarlet fever. Another physician treated the patient for that disease, but the defendant continued to treat the arm by means of "heat or diathermy treatments." The patient recovered, except for a permanent scar on the hand. His father sued the physician who had treated the fracture, the defendant in this case. The trial court directed a verdict in favor of the defendant, and the plaintiff appealed to the Supreme Court of Michigan.

The plaintiff contended that the defendant was negligent in that he applied heat for too long a period, despite the remonstrances of the parents and the entreaties of the patient to stop because it was burning him. Evidence was offered to show that after a severe fracture there is an inadequate blood supply to the injured part and that "a hyperemial lamp" is commonly used to supply the deficiency. The defendant testified that thirty minutes was the regular and proper time for the application of heat and that he had applied it for as long as forty-five minutes; but the record does not show the distance from the arm at which the lamp was placed in this case or the usual or proper distance. The record is obscure as to the type of heat therapy used, the terms "heat lamp," "heat or diathermy," and a lamp that gives "only an even heat" and does not give off "penetrating rays" being used indifferently to describe the device used. The defendant testified that a blister had formed when the application of heat was discontinued, but that it would have appeared in any event as a result of the fracture and the subsequent swelling, even if less heat had been applied. To the plaintiff's charge that the defendant rubbed his hand over the blistered area taking off the skin and leaving raw flesh exposed, the defendant replied that he had put his hands over the blister to determine the amount of the underlying swelling.

The plaintiff contended also that the cloth placed by the defendant over the patient's arm when heat was applied was a dirty, infected rag and caused the scarlet fever that developed while the patient was under treatment. The defendant's testimony, however, was to the effect that he had used a piece of stockinet and not an infected rag. It was shown, too, that the period of incubation for scarlet fever is from four to six days and that the patient did not develop the disease until ten days after the allegedly infected cloth had been used. The plaintiff, said the Supreme Court, failed to prove that negligence on the part of the defendant was responsible for the scarlet fever from which the patient suffered.

The plaintiff offered but one expert witness, and under cross-examination his testimony failed to support the plaintiff's charges. The plaintiff relied therefore, so far as related to his charge of negligence, on previous decisions of the court holding that no expert testimony is necessary in a case in which no question of skill, judgment or practice beyond the knowledge of laymen is involved. The only inference that could be drawn from the scar on the patient's arm or hand, the plaintiff claimed, was that the defendant was negligent. A burning, the Supreme Court admitted, may be so severe and due to such negligence that the case is not exclusively one of medical knowledge. The burning in the instant case, however, was not of that character; the question of negligence was one exclusively for expert testimony. The plaintiff presented but one medical witness and he, when informed of the type of therapeutic lamp used, absolved the defendant from any negligence in connection with its use. There was no evidence to show that the defendant's handling of the blister was not in accord with recognized standard practice in the community.

The judgment of the circuit court, Wayne County, in favor of the defendant, was affirmed.—*Rubenstein v. Purcell (Mich.), 267 N. W. 646.*

Taxes: Municipality's Right to Impose Occupation Tax on Dentists.—A Kansas law authorizes cities of the second and third class to classify and license for purposes of regulation or revenue any and all occupations, businesses or professions carried on within its corporate limits which are not prohibited by law or which are not specifically or exclusively reserved to the state or county as objects of taxation or regulation. Under this law, the city of Independence by ordinance imposed a license tax on certain named professions, including dentistry. The defendant, a dentist, apparently refused to pay the tax and the city instituted the present proceedings against him to collect the tax and to enjoin him from practicing dentistry until the tax was paid. The trial court gave judgment for the defendant, and the city appealed to the Supreme Court of Kansas.

The fact that the practice of dentistry, said the court, is regulated by a state statute which exacts a license fee of dentists does not exempt dentists from the imposition of the occupation tax sought to be imposed by the city ordinance. A license fee was differentiated from an occupational tax in *Duff* v. *Garden City,* 122 Kan. 390, 251 P. 1091, as follows:

> The question of whether or not the city ordinance is in conflict with the state law depends largely upon whether the charge is an occupation tax or a license fee—whether it is a revenue measure wholly or in substantial part regulatory. If it is an occupation tax, it is not within the prohibition of the statute cited, but, if it is wholly or in part a license fee, regulatory in character, it conflicts with the statute and is invalid. . . .
>
> A regulation charge is one exacted for a privilege or as a condition precedent to the carrying on of the business, and is an exercise of the police power, while an occupation tax is imposed under the power of taxation. 6 Words and Phrases, First Series, p. 4908.

The dental practice act nowhere prohibits a city from imposing an occupational tax for revenue, nor does it reserve to the state the matter of taxing a dentist. The ordinance passed by the city of Independence was held to be valid.—*City of Independence v. Hindenach (Kan.), 61 P. (2d) 124.*

Society Proceedings

COMING MEETINGS

American Association for the Study of Neoplastic Diseases, Baltimore, June 24-25. Dr. Eugene R. Whitmore, 2139 Wyoming Ave. N. W., Washington, D. C., Secretary.

American Physiotherapy Association, St. Paul, June 27-July 1. Miss Jefferson I. Brown, Tichenor Hospital School, Long Beach, Calif., Secretary.

American Urological Association, Minneapolis, June 29-July 1. Dr. Clyde L. Deming, 789 Howard Avenue, New Haven, Conn., Secretary.

Maine Medical Association, Belgrade Lake, June 20-22. Miss Rebekah Gardner, 22 Arsenal St., Portland, Secretary.

Montana, Medical Association of, Great Falls, July 13-14. Dr. Thomas L. Hawkins, 50 North Main St., Helena, Secretary.

Pacific Northwest Medical Association, Great Falls, Mont., July 8-10. Dr. C. W. Countryman, 407 Riverside Ave., Spokane, Wash., Secretary.

Rocky Mountain Medical Conference, Denver, July 19-21. Mr. Harvey T. Sethman, 1612 Tremont Place, Denver, Secretary.

Vancouver Medical Association Summer School, Vancouver, B. C., June 22-25. Dr. J. R. Naden, 203 Medical-Dental Bldg., Vancouver, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1926 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them. Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

13: 387-510 (April) 1937

Orthodiagraphic Study of 291 College Students Who Showed No Evidence of Heart Disease. J. Edeiken and F. C. Wood, Philadelphia.—p. 387.
Cardiac Psychosis and Symptom of Anxiety. J. Wortis, New York.—p. 394.
*Mechanism of Impaired Auriculoventricular Conduction in Acute Rheumatic Fever. H. G. Bruenn, New York.—p. 413.
Dissecting Aneurysm of Aorta, Correctly Diagnosed: Description of Sign Heretofore Not Mentioned. H. Roesler, U. G. Gifford and W. Betts, Philadelphia.—p. 426.
Clinical Value of Comparative Measurements of Pressure in Femoral and Cubital Veins. E. B. Ferris Jr., Cincinnati, and R. W. Wilkins, Boston.—p. 431.
Value of Direct Venous Pressure Estimations in Ambulatory Cardiac Patients. A. R. Berger, New York.—p. 440.
Transitions Between Normal Sinus Rhythm, Ventricular Escape, Auriculoventricular Nodal Rhythm and Auriculoventricular Dissociation: Report of Twelve Cases, Including Seven Showing Interference Dissociation. F. B. Cutts, Providence, R. I.—p. 451.
*Constriction of Pulmonary Artery by Adhesive Pericarditis. B. A. Gouley, Philadelphia.—p. 470.
Clinical Observations in Erythromelalgia and Method for Its Symptomatic Relief. I. Mufson, New York.—p. 483.

Impaired Auriculoventricular Conduction in Rheumatic Fever.—Bruenn observed twenty-two patients with acute rheumatic fever, twenty of whom showed evidence of cardiac damage by the presence of valvular defects. Each patient showed impairment of auriculoventricular conduction in the electrocardiogram. The degree of block varied from prolongation of the PR interval above 0.2 second to incomplete heart block. None of the patients had received digitalis or quinidine. Salicylates were being administered to more than half of them at the time of the observations. The conduction times in these patients and in a control group of seven subjects of comparable age without evidence of heart disease, whose electrocardiograms were normal, were studied after the intravenous injection of atropine or the subcutaneous injection of epinephrine. Two control electrocardiograms were taken, one hour apart. Further records were then made at intervals of from one to four minutes during the periods of observation. Atropine completely abolished the conduction defect in nineteen of the twenty-two patients studied. There was a marked diminution in the degree of block in the one patient to whom the drug was given intramuscularly. In one of the two patients who did not show a reduction in the degree of block after atropinization, the impairment persisted for a year and was probably due to organic changes in the junctional tissues. Three patients, in addition to impairment of auriculoventricular conduction, also showed delay in intraventricular conduction. Atropine had no effect on this disturbance. In three persons who gave evidence of emotional stress at the time of the observations, marked reductions in the PR intervals were noted, despite little or no acceleration of the ventricular rate. Small doses of epinephrine, injected subcutaneously, in five cases produced results similar to those observed in a control group. Larger doses either diminished the conduction defect (two cases) or markedly increased it (three cases). The latter result was not seen in a control group under similar conditions. After moderate exercise, there was some decrease in the PR interval, with a slight increase in the ventricular rate. It was concluded that in cases of acute rheumatic fever impairment of auriculoventricular conduction is due, in part at least, to an increase in vagal tone. It was suggested that the focus of vagal irritation lies in the meduila.

Constriction of Pulmonary Artery by Adhesive Pericarditis.—Gouley discusses a pericardial involvement, observed in six cases, that affects the pulmonary artery. The adhesions which at times surround this artery may be dense and may actually compress and narrow the vessel to a striking degree. They are almost certainly the cause of physical signs which in his opinion are sufficiently definite to warrant a clinical diagnosis of pulmonary arterial constriction. The pericardial lesions were caused by rheumatic fever. The fundamental pathologic lesion is massive mediastinopericarditis, in which thick, adherent scar tissue surrounds and constricts the pulmonary artery. The pericarditis is rarely limited to the pulmonary artery. Constriction of other vascular trunks may be present. Histologic examination of the pulmonary artery in two cases revealed focal degeneration in the media, involving both muscle and elastic tissue. Examination of the pulmonic area by means of palpation, percussion and auscultation will reveal a variable number of physical signs: (1) a harsh systolic murmur in the pulmonic area, in the second and third left interspaces, (2) a greatly accentuated second pulmonic sound, (3) a diastolic shock in the same area, (4) a systolic pulsation coincidental with the systolic murmur, extending upward in the third and second left interspaces in the direction of the pulmonary artery, which may be followed by (5) a successive retraction of those interspaces, pulsation and retraction having a sinuous appearance, (6) the presence in a few cases of a systolic thrill palpable in the area of the systolic murmur and pulsation and (7) increase in the area of cardiac dulness in the third left interspace indicative of hypertrophy and dilatation of the right ventricle (conus portion). While four patients died relatively early in the course of their rheumatic disease with recurrent acute infection, mechanical obstructive heart failure was probably only incidental or at most contributory to the final outcome. In two patients, however, the adhesive pericarditis with compression of the pulmonary artery was a major factor in the development of cardiac failure.

American J. Digest. Dis. & Nutrition, Fort Wayne, Ind.

4: 83-148 (April) 1937

Study of Glycemic Response in Patients with Biliary Tract Disease. H. A. Rafsky, New York.—p. 83.
Studies on Neutralization Test of Gastric Acidity in Relation to General Disease. K. Phillips, Miami, Fla.—p. 87.
Acidity Reduction Test versus Fractional Test Meal. F. L. Apperly, Richmond, Va.—p. 91.
Relation Between Acid-Base Equilibrium and Gastric Bacterial Flora. M. Hood and L. Arnold, Chicago.—p. 95.
Colloidal Aluminum Hydroxide in Treatment of Peptic Ulcer. C. R. Jones Jr., New Orleans.—p. 99.
Review of Intragastric Photography. B. M. Bernstein, Brooklyn.—p. 102.
Alcohol as a Stomachic. L. Krueger and F. C. MacIntosh, Montreal.—p. 104.
Observations on Parenteral Administration of Fat Emulsions. J. K. Narat, Chicago.—p. 107.
*Pruritus Ani: Preliminary Report of 133 Cases Using Triple Distilled Water. H. E. Bacon, Philadelphia.—p. 109.
Renocolic Fistula: Report of Instance Roentgenologically Simulating Carcinoma of the Colon. M. Feldman, Baltimore.—p. 110.
Study of the Cardia. W. Zeller and G. E. Burget, Portland, Ore.—p. 113.

Pruritus Ani.—The method that Bacon employs in the treatment of pruritus ani is as follows: The patient is placed in an exaggerated left lateral position. The quadrant causing the most distress, or the one appearing most inflamed, is selected for the first injection. The area is swabbed briskly with alcohol or tincture of green soap and dried with sterile gauze. A point just beyond the periphery of the pruritic zone is selected and touched with tincture of iodine. This is wiped off with alcohol, and when the skin has dried an intradermal wheal is made with 1 per cent procaine hydrochloride by means of a small hypodermic needle. A 21 gage needle, 2½ inches in length, to which is attached a syringe containing 1 cc. of the procaine hydrochloride, is slowly advanced beneath the pruritic skin. At this point the procaine hydrochloride is deposited. The needle is held in situ and a 10 cc. syringe containing 10 cc. of triple distilled water is substituted. The contents are slowly injected until the entire amount is used. Should pain or discomfort attend its introduction, injection is suspended for a few seconds. Each quadrant is similarly treated at intervals of three or four days, until a series of eight injections has been given, or until the patient is symptom free. In more than 50 per cent of his 133 cases the author employed only 5 cc. of the distilled water. The duration of symptoms

ranged from nine months to twenty-three years. Following a period of from thirty to thirty-six months, 94.3 per cent of the patients were benefited. Of these, some were completely symptom free and some were improved.

American Journal of Psychiatry, New York

93: 1009-1264 (March) 1937

Review of Physical-Chemical Studies in Epilepsy. M. Brown and H. A. Paskind, Chicago.—p. 1009.
Conduct Disorders of Intellectually Subnormal Children: Study of Correlations of Intelligence Levels of Eighty to Eighty-Nine, to Behavior Disorders of Children. L. A. Lurie, Cincinnati.—p. 1025.
Folie à Deux: Induced Psychoses with Report of Case. S. K. Pollack, Milwaukee.—p. 1039.
Study of Cases of Folie à Deux. M. M. Grover, Wingdale, N. Y.—p. 1045.
Apraxias and Other Neurologic Sequels of Carbon Monoxid Asphyxia: Report of Case. I. C. Nichols and Margaret Keller, Providence, R. I.—p. 1063.
Biochemistry of Psychoneuroses: Review. R. A. McFarland and H. Goldstein, New York.—p. 1073.
Psychiatric Technic for Examination of Criminals. L. S. Selling, Detroit.—p. 1097.
Age-Incidence Principle of Investigation in Evaluating Biologic Significance of Inherited Variations in the Problems of Human Constitution: I. Types of Scapulas. W. W. Graves, St. Louis.—p. 1109.
Body Build of the Male Homosexual: Note. J. Wortis, New York.—p. 1121.
The Life and Work of Richard Maurice Bucke: An Appraisal. G. H. Stevenson, London, Ont.—p. 1127.
Group Activities on a Children's Ward as Methods of Psychotherapy. Lauretta Bender, New York.—p. 1151.
Endocrine Disturbances in Behavior Problems. M. Molitch, Jamesburg, N. J.—p. 1175.
Studies in Endocrine Therapy in Epilepsy: Second Report. C. Stein, Palmer, Mass.—p. 1181.
Psychiatric Facilities In and About Pittsburgh. C. C. Wholey, Pittsburgh.—p. 1185.
Psychiatric Studies in Medical Education: II. Neurotic Trends in Senior Medical Students. E. A. Strecker, K. E. Appel, H. D. Palmer and F. J. Braceland.—p. 1197.
Mortality Among Patients with Involution Melancholia. B. Malzberg.—p. 1231.

Arch. of Physical Therapy, X-Ray, Radium, Chicago

18: 193-256 (April) 1937

The Blanket Method of Inducing Artificial Fever. N. N. Epstein, San Francisco.—p. 199.
*Carbon Arc Treatment in Pulmonary and Pleuritic Tuberculosis. A. L. Banyai, Wauwatosa, Wis.—p. 205.
Diathermy in Biliary Tract Disease. H. A. Rafsky, New York.—p. 214.
Electrophoresis in Physical Therapy. K. Harpuder, New York.—p. 221.
*Effects of Acetyl Beta-Methylcholine Iontophoresis in Arthritis. L. Martin and G. O. Eaton, with assistance of H. Ruland and L. Ruland, Baltimore.—p. 226.
Treatment of Cancer of Head, Face and Neck. A. F. Tyler, Omaha.—p. 233.

Carbon Arc Treatment in Tuberculosis.—Banyai used carbon arc irradiation in the treatment of ninety-four patients who had pulmonary tuberculosis and twenty-one who had tuberculous pleurisy. The two main factors on which the success or failure of this treatment depends are careful selection of cases and proper technic. Minimal, moderately advanced and even far advanced cases may benefit by this treatment, provided the temperature is not more than 99.5 F. and the general physical condition is satisfactory. Patients with fibrosing or exudative lesions, including cavities, may respond favorably. When one is deciding the problem of the suitability of this treatment, the sedimentation test, the Arneth or Schilling count, the total leukocyte count and the monocyte-lymphocyte ratio are of value. A high leukocyte count, marked "shift to the left" in the Arneth or Schilling count and a greatly increased monocyte-lymphocyte ratio contraindicate irradiation. Other contraindications are fever, rapidly advancing pulmonary tuberculosis, large cavities, acute stage of tuberculous pleurisy, poorly compensated cardiac lesion, marked general debility and amyloidosis. The adequate dose cannot be predetermined. The optimal exposure is the minimal exposure that elicits the desired therapeutic response. Many failures are caused by prolonged overexposure. Reactions, in general, are most likely to occur in cases of far advanced or exudative lesions. Minor reactions that did not necessitate the discontinuance of the treatment occurred in twenty-five cases, and the treatment was stopped because of reactions in thirteen. The variable course of pulmonary tuberculosis, under any regimen, calls for a close analysis of reaction-like incidents during treatment with a carbon arc lamp. Pulmonary hemorrhage was not more frequent during treatment than without it. Analysis of the end results in a group of thirty-eight patients whose treatment lasted from three to six months showed that one minimal case became apparently arrested; of the eighteen moderately advanced cases, seven became apparently arrested, two quiescent, three improved and six remained stationary; of the twelve far advanced cases four improved, six remained stationary, one became worse and one patient died. All patients with tuberculous pleurisy made a complete recovery.

Acetyl Beta-Methylcholine Iontophoresis in Arthritis.—Martin and his associates present the results obtained by the treatment of twenty-eight men and fifty-five women having chronic forms of arthritis by means of iontophoretic administration of acetyl-β-methylcholine. They used a 45 volt B battery, with rheostatic control, and an attached ammeter capable of measuring in milliamperes. The material to be electrolyzed, physiologic solution of sodium chloride or 0.25 or 0.5 per cent acetyl-β-methylcholine, was applied to the skin by means of asbestos paper which had been soaked in the desired solution. The circuit was closed and the amperage was slowly raised to 20 or 30 milliamperes, depending on the local sensation of the patient, and kept there for twenty minutes. Generally the patient felt a mild prickling or trickling sensation until the current became constant. Of the patients with infectious arthritis, 57 per cent were improved and some became symptom free; 79 per cent of those with metabolic forms of arthritis were helped and some also became symptom free. The mode of action of the drug is not understood, but it seems likely that it has a stimulating action on the muscles innervated by the parasympathetic system. It is probably not the result of a purely local change alone.

Journal of Bacteriology, Baltimore

33: 339-450 (April) 1937

Decomposition of Carbohydrates and Alcohols with Production of Gas at 46 C. by Members of Genus Escherichia. A. A. Hajna, Baltimore.—p. 339.
Bacterial Variation as Studied in Certain Unstable Variants. M. W. Deskowitz, New York.—p. 349.
Contagious Tumor-like Condition in Lizard (Anolis Equestris) as Induced by New Bacterial Species, Serratia Anolium (sp. n.). F. Duran-Reynals and H. J. Clausen, New York.—p. 369.
Lipolytic Action of Staphylococci on Some Pure Triglycerides. R. E. Trussell and L. A. Weed, Iowa City.—p. 381.
Viability of Bacteria in Sea Water. S. A. Waksman and Margaret Hotchkiss.—p. 389.
Adsorption of Bacteria by Inert Particulate Reagents. J. B. Gunnison and M. S. Marshall, San Francisco.—p. 401.
Simple Method for Preserving Bacterial Cultures by Freezing and Drying. H. F. Swift, New York.—p. 411.
Gram-Negative Bacterioides of Intestine. J. E. Weiss and L. F. Rettger, New Haven, Conn.—p. 423.
Relation of Bacillus Siamensis and Similar Pathogenic Spore-Forming Bacteria to Bacillus Cereus. F. E. Clark.—p. 435.
Actions Taken by Second International Microbiologic Congress in London, 1936, Regarding Bacteriologic Nomenclature. R. St. John-Brooks and R. S. Breed.—p. 445.

Journal of Pediatrics, St. Louis

10: 437-576 (April) 1937

*Protamine Insulin: Its Use in Children. Alvah L. Newcomb, Chicago; M. W. Dick, Iowa City, and Louise Schnute, Chicago.—p. 437.
Clinical Experience with Protamine and Crystalline Insulin in Treatment of Diabetes Mellitus in Children. W. E. Nelson and C. Dummer, Cincinnati.—p. 446.
Natural History of Rheumatic Fever in the First Three Decades. May G. Wilson, New York.—p. 456.
Body Temperature Variations in Apparently Healthy Children. F. van der Bogert and C. L. Moravec, Schenectady, N. Y.—p. 466.
Newer Aspects of the Whooping Cough Problem. J. A. Toomey, Cleveland.—p. 472.
Streptococcus Haemolyticus Meningitis, with Recovery Following Mastoidectomy and Intrathecal Administration of Lyophile Convalescent Scarlet Fever Serum. J. P. Scott and S. X. Radbill, Philadelphia.—p. 486.
Congenital Duodenal Atresia. J. Rose and A. M. May Jr., Washington, D. C.—p. 490.
*Clinical Study of Apple Diet in Treatment of Diarrhea in Infants. E. E. Smith and R. I. Fried, Columbus, Ohio.—p. 495.
Brain Tumors from the Pediatrician's Point of View: Report of Ten Cases. K. Habel, Philadelphia.—p. 502.
IV. Treatment with Gonadotropic Hormone (Anterior Pituitary-like) of Nonadipose Boys Showing Genital Dystrophy. G. B. Dorff, Brooklyn.—p. 517.
The Future of Pediatrics. J. L. Morse, Boston.—p. 529.

Protamine Insulin.—Newcomb and his co-workers have used protamine insulin in the treatment of thirty-two patients with juvenile diabetes mellitus. The diets were essentially

unaltered for the hospital patients with the change to protamine insulin, although in a few instances redistribution of the carbohydrate between the three meals was found advantageous. Over 2,000 determinations of the blood sugar were made in this study. Estimations of the urinary sugar were made on six hour specimens by Benedict's method. Observations of the effect of varied schedules and types of protamine insulin were carried out. During the first few days after the change from regular to protamine insulin, a higher sugar content was not infrequent, possibly owing to delayed absorption of part of the insulin for more than twenty-four hours. Ketosis developed in one patient, an infant treated for a few days in the home; in this case other factors were felt to be responsible. No allergic manifestations or local reactions were seen. Increased irritability was observed in two children. Many patients did not experience periods of intense hunger, as they did while receiving regular insulin. In instances in which all the insulin could be administered in the morning, the children showed more emotional stability. In twenty-three of thirty-two cases studied, satisfactory control was obtained by a single morning dose. The afternoon and evening activities did not need to be so carefully restricted. During the summer there was a definite decrease in the total dose of protamine insulin, but after the children returned to school an increase in insulin was required.

Apple Diet in Diarrhea in Infants.—Smith and Fried's study is based on ninety cases of enteral, parenteral and irritative-fermentative infection. Seven infants who were admitted in a moribund condition, with acute alimentary intoxication, four patients with proved dysentery and one infant with what clinically resembled dysentery died in spite of the administration of apple diet, specific serum, transfusions and supportive measures. The average length of time that apples were given in cases of fermentative-irritative diarrhea was from seven to eight days, the first formed stool appearing between the fifth and the eighth day. One death occurred in this group. In six cases believed to have the same cause, a starvation period of twenty-four hours was followed by a protein milk formula. No deaths occurred in this group. Eleven infants with diarrhea of infectious origin were treated with scraped raw apple. One infant in this group died. In all, twenty-eight infants, excluding the patients with dysentery, were treated by an apple diet and twelve by starvation followed by the administration of protein milk. There were no striking differences in results. Those in the dispensary were better than those in the hospital. The majority of the patients treated in the dispensary showed improvement in from two to four days, regardless of which mode of therapy was followed.

Journal of Urology, Baltimore

37: 407-604 (April) 1937

Renal Atrophy. R. E. Cumming and C. F. Schroeder, Detroit.—p. 407.
*Diagnosis and Treatment of Trauma to Kidney. A. H. Wood, Baltimore.—p. 437.
Experimental Study of Injuries of Kidney. W. C. Stirling and A. M. Lands, Washington, D. C.—p. 466.
*Metastatic Pulsating Tumors of Sternum Secondary to Renal Hypernephroma. L. J. Roth and H. B. Davidson, Columbus, Ohio.—p. 480.
Solitary Renal Cysts. R. H. Herbst and H. J. Polkey, Chicago.—p. 490.
Primary Papillary Carcinoma of Ureter. W. N. Taylor and C. A. Kuehn, Columbus, Ohio.—p. 504.
Treatment of Neurogenic Vesical Dysfunction Complicated by Lesions of Vesical Outlet. C. D. Creevy, Minneapolis.—p. 513.
Vesicodiverticulovaginal Fistula: Report of Case. E. O. Swartz, Cincinnati.—p. 518.
Arterial Distribution Within Prostate Gland: Its Rôle in Transurethral Prostatic Resection. R. H. Flocks, Iowa City.—p. 524.
Prostatic Resection: Review. G. R. Livermore, Memphis, Tenn.—p. 549.
The Prostatic Problem. W. E. Lower, Cleveland.—p. 555.
Intraprostatic Injection: Experimental Study: Further Observations. V. J. O'Conor and R. L. Ladd, Chicago.—p. 557.
Relief of Postprostatectomy Vesical Dysfunction by Transurethral Surgery. J. L. Emmett, Rochester, Minn.—p. 569.
Involvement of Upper Part of Urinary Tract Associated with Uterine and Ovarian Tumors. H. L. Morris and Valeria R. Juracsek, Detroit.—p. 582.
*Water Metabolism in the Surgical Patient. R. M. Nesbit, Ann Arbor, Mich.—p. 588.
Factors Influencing Solubility of Relatively Insoluble Salts in Urine. I. R. Sisk and O. Toenhart, Madison, Wis.—p. 595.

Diagnosis and Treatment of Kidney Trauma.—Wood asserts that immediately after an injury to the kidney the patient is in shock, complains of pain on the injured side and notes the presence of blood in the urine. There are changes in the pulse rate, blood pressure and blood picture, depending on the length of time following the injury, the extent of the injury and the degree of hematuria and shock. There is generally abdominal pain associated with tenderness or rigidity, which later may become unilateral or localized over the injured area; and in severe injury to the kidney, not infrequently a mass is present in the loin. Gross or scanty hematuria is present but should not be interpreted as an index to the extent of the injury. In occasional cases emergency methods must be employed immediately to combat shock, arrest hemorrhage and handle associated injuries of the viscera. When plain roentgenograms disclose a mass with obliteration of the psoas muscle shadow, an excretory urogram is indicated. In the author's series of twenty-five cases, excretory urography was employed in seventeen. Diagnostic shadows were disclosed in twelve cases on the injured side, and in three cases a preoperative diagnosis of ruptured kidney was made possible. Of five patients whose excretory urograms failed to reveal satisfactory shadows, three recovered without operative intervention and two had the kidney removed. Parenchymal damage of the kidney results in complete or temporary anuria, hindering the excretion of the opaque solution and increasing the difficulty of interpretation of the films. This is to be expected in cases of severe trauma and in cases of marked contusions without rupture of the renal pelvis. Sufficient opaque solution is excreted by the uninjured portion of the kidney ruptured transversely to outline the point of rupture. Strict attention to the clinical course is imperative, and examinations at frequent intervals are essential when one is outlining the course of treatment. Absolute rest in bed is essential until hematuria ceases and all symptoms have subsided. Pain is controlled by morphine. Body fluids are supplied by increasing the fluid intake by mouth or by subcutaneous infusion. Abdominal distention and intestinal evacuation are handled preferably by enemas rather than by drastic purgation. An operation should be performed immediately in desperate cases only, and a blood transfusion should be given during the operation. There were three deaths among the twenty-five cases, two operative and one nonoperative. One operative death was due to head injury and the other to postoperative pneumonia. The nonoperative death was due to unrecognized rupture of the kidney, injury to the peritoneum and the mesentery.

Metastatic Pulsating Tumors of Sternum.—Roth and Davidson report the presence of a pulsating tumor of the sternum metastatic from a hypernephroma. The development of cerebral symptoms suggestive of a tumor of the brain was ascribed to another metastasis from the same primary tumor. However, the necropsy demonstrated that this was not the cause and that the cerebral symptoms were produced by a separate primary neoplasm—an astrocytoma. Although it is theoretically possible for a metastatic hypernephroma of the sternum to be a solitary metastasis and for surgical removal of this tumor together with removal of a recognized primary tumor to result in a cure, it seems that small primary growths, difficult to demonstrate, are more apt to be complicated by osseous metastases. Five of the six reported cases appear to substantiate this conclusion, since in none was there any clinical evidence of renal pathologic changes; the authors' case is exceptional in that clinical symptoms directed their attention to the kidney. What clinically appears to be a solitary metastasis from a hypernephroma may in reality be accompanied by multiple hidden metastases, and therefore surgical intervention is inadvisable. In the presence of a demonstrable metastasis from a hypernephroma, irradiation is indicated as a palliative measure.

Water Metabolism in Surgical Patients.—Nesbit studied a series of patients undergoing a variety of surgical operations to determine the amount of fluid lost during operation and the immediate postoperative period. The average loss of fluid by vaporization was 700 cc., and the average total loss of fluid, including blood, vomitus, urine and vaporization, was 1,000 cc. It is thus obvious that an imbalance between available fluids and total fluids lost is considerable. The fluid lost can be reduced if the extra blankets of the old-fashioned "ether bed" are done away with and the patient is transferred directly from the operating table to a bed warmed with hot water bottles. In considering available water for the surgical patient, it must

be remembered that the usual 1,000 to 1,500 cc. available from the food of a normal diet may be lacking entirely because of dietary restrictions. Patients who enter the hospital in a dehydrated condition present an additional problem in water balance. Water balance studies on normal subjects showed that signs of serious dehydration were produced when the water loss was equal to approximately 6 per cent of the body weight. This loss should be restored by additional fluid intake.

Nebraska State Medical Journal, Lincoln

22: 121-164 (April) 1937

Hemochromatosis. A. Sachs and B. C. Russum, Omaha.—p. 121.
Peripheral Vascular Disease: III. Arteriosclerosis Obliterans. C. W. McLaughlin Jr., Omaha.—p. 127.
Contraception and the Rhythm. R. J. O'Donnell, Columbus.—p. 132.
Value of True Lateral View of Duodenum. A. F. Tyler, Omaha.—p. 134.
Roentgen Diagnosis of Esophagus. A. P. Overgaard, Omaha.—p. 136.
Metastatic Carcinoma of Choroid: Report of Two Cases. C. M. Swab, Omaha.—p. 140.

New England Journal of Medicine, Boston

216: 681-726 (April 22) 1937

Granulosal Cell Tumors of the Ovary: Report of Three Recent Cases. J. V. Meigs and L. Parsons, Boston.—p. 681.
Factor of Mental Stress in Essential Hypertension. R. S. Palmer, Boston.—p. 689.
Human Autonomic Pharmacology: IV. Effect of Benzedrine Sulfate on the Gallbladder. P. G. Schube, M. Ritvo, A. Myerson and Ruth Lambert, Boston.—p. 694.
Treatment of Constipation. A. G. Brailey, Boston.—p. 697.

Pennsylvania Medical Journal, Harrisburg

40: 491-596 (April) 1937

Treatment of Asthma on Etiologic Basis. L. N. Gay, Baltimore.—p. 491.
Accurate Diagnosis of Hay Fever. J. A. Clarke Jr. and A. L. Bolden, Philadelphia.—p. 498.
Rôle of Allergy in Medical Practice. L. H. Criep, Pittsburgh.—p. 502.
Glucose Tolerance and Metabolism in Allergic Individual: Report of Glucose Tolerance Observations in 600 Patients. H. B. Wilmer and M. M. Miller, Philadelphia.—p. 505.
Spasmodic Torticollis and Its Relief. J. T. Rugh, Philadelphia.—p. 511.
*Observations on the Female Bladder and Urethra. T. R. Fetter and C. I. Lintgen, Philadelphia.—p. 515.
Benign Lesions of the Breast. E. P. Buchanan, Pittsburgh.—p. 521.
Relation of the Physician to Social Security. F. F. Borzell, Philadelphia.—p. 525.
Nephrostomy and Large Renal Calculus. J. B. Lownes and E. Bloom, Philadelphia.—p. 528.

Female Bladder and Urethra.—In a study of 395 female patients with urinary disturbances (250 in the gynecologic clinic and 145 in the urologic clinic), Fetter and Lintgen observed that the bladder was entirely responsible for the symptoms in forty and the urethra in fifty-six cases. Both organs were partly responsible for the symptoms in 189. Lesions of the generative organs were responsible etiologic factors in thirty-nine cases. Other organs not connected with the urinary and generative tracts caused the symptoms in nine. The most prominent symptom was frequency of urination. For a correct diagnosis it is necessary to obtain a thorough urinary and gynecologic history and a catheterized specimen of urine. Urinary symptoms during parturition or the puerperium may be due to infection, obstruction or injury to the bladder, trigon or sphincter muscle of the urethra following delivery. Intravenous urography, cystography and urethrography will often demonstrate the lesion.

Psychiatric Quarterly, Utica, N. Y.

11: 181-332 (April) 1937

Review of Activities of Psychiatric Institute During the Past Year. N. D. C. Lewis, New York.—p. 181.
Pfropfschizophrenia: Schizophrenia Engrafted on Mental Deficiency. P. Milici, Kings Park, N. Y.—p. 190.
Prolonged Sedation with Sodium Barbital of Male Disturbed-Continued Treatment Patients. P. Polatin, Brentwood, Long Island, N. Y.—p. 213.
The Concept of Catatonia. G. S. Sprague, White Plains, N. Y.—p. 222.
Studies in Obsessive Ruminative Tension States: III. Effect of Erratic Discipline in Childhood on Emotional Tensions. L. F. Woolley, Towson, Md.—p. 237.
Dream Studies in Hallucinated Patients: Preliminary Study. C. E. Trapp and R. H. Lyons, Boston.—p. 253.
Technical Approaches Used in Study and Treatment of Emotional Problems in Children. J. Louise Despert, New York.—p. 267.
Family Care of Patients at the Marcy State Hospital. S. W. Bisgrove, Marcy, N. Y.—p. 296.
The Science of the Living Organism: Critique of Kurt Goldstein's Theory. Z. Piotrowski, New York.—p. 305.

Puerto Rico J. Pub. Health & Trop. Med., San Juan

12: 295-368 (March) 1937

Concomitance of Endamoeba Histolytica and Hymenolepis Nana. R. Rodríguez-Molina and W. A. Hoffman, San Juan.—p. 295.
Fever and Schistosomiasis Mansoni: Report of Two Cases. J. Knott, St. Croix, Virgin Islands.—p. 306.
Some Observations on Effects of Environmental Changes on Biology of Endamoeba Histolytica. H. A. Poindexter, Washington, D. C.—p. 314.
Treatment of Experimental Hepatic Insufficiency with Intravenous Injections of Lipoids. J. Surós Forns, Moracho and Pascual, Barcelona, Spain.—p. 348.
Vitamin Content of West Indian Shark Liver Oils: II. Vitamin D Content of Liver Oil of Small Blue Shark. C. F. Asenjo, D. H. Cook and J. H. Axtmayer, San Juan.—p. 358.

Virginia Medical Monthly, Richmond

64: 65-122 (May) 1937

I. Incidence and Importance of Pneumonia. H. B. Mulholland, University.—p. 65.
II. Diagnosis of Lobar Pneumonia. H. Walker, Richmond.—p. 66.
III. General Care of Pneumonia. P. S. Smith, Abingdon.—p. 69.
IV. Special Therapeutic Procedures in Care of Pneumonia. W. B. Martin, Norfolk.—p. 73.
Mortality of Lobar Pneumonia in Piedmont Virginia: Analysis of 310 Adult Cases. S. D. Blackford, University.—p. 76.
The Problem of Nonunion in Fracture of Neck of Femur. P. C. Colonna, New York.—p. 77.
Treatment of Arthritis. J. R. Hamilton, Nassawadox.—p. 81.
Treatment of Pulmonary Tuberculosis. D. B. Cole and W. L. Nalls, Richmond.—p. 85.
Werdnig-Hoffman Familial Progressive Muscular Atrophy. T. D. Walker Jr., Newport News.—p. 90.
Tetanus and Differential Diagnosis: Report of Two Cases. W. O. Porter, Roanoke.—p. 92.
Intestinal Bleeding. O. L. Hite, Richmond.—p. 94.
Treatment of Bacillary Dysentery in Infants: Note on Use of Fluids. W. E. Keiter, Kinston, N. C.—p. 99.
Some Phases of School Medical Work. C. L. Outland, Richmond.—p. 100.
Practicing Physician's Part in Preventive Medicine. L. L. Parks, Tarboro, N. C.—p. 103.

West Virginia Medical Journal, Charleston

33: 193-240 (May) 1937

Treatment of Fracture of Neck of Femur. C. L. Scudder, Boston.—p. 193.
Blood Supply to Proximal End of Femur and Its Relation to Fractures of Neck of Femur. S. B. Chandler, Morgantown.—p. 197.
*Pulmonary Symptoms Resulting from Ulceration of Hilar Lymph Nodes into a Bronchus. P. P. Vinson and E. C. Toone, Richmond, Va.—p. 200.
Tuberculin Testing and Its Relation to a Public Health Program in Control of Tuberculosis. R. A. Burdette, Morgantown.—p. 202.
Cancer of Stomach. J. E. Cannaday, Charleston.—p. 206.
Neoplasms of Ovary. C. C. Fenton, Morgantown.—p. 215.
Acute Lymphatic Leukemia: Case Report. L. F. Dobbs Jr., Huntington.—p. 218.
Bloody Pleural Effusion: Case Report. P. M. Huddleston, Huntington.—p. 220.
Erysipelas: Case Report. F. L. Coffey, Huntington.—p. 222.

Pulmonary Symptoms from Ulceration into a Bronchus.—According to Vinson and Toone, ordinary methods of examination fail to reveal the cause of many pulmonary symptoms. A cough, fever, hemoptysis and thoracic pain may be present without evidence of thoracic disease on physical or roentgenoscopic examination. Unless a chronic pulmonary lesion is associated with tubercle bacilli in the sputum, direct visualization of the tracheobronchial tree is indicated. Although roentgenoscopic study of the lungs following the injection of iodized oil into the tracheobronchial tree may reveal obstruction or dilatation of the bronchi, it is rarely possible to determine with accuracy the cause by this method of examination alone. Bronchoscopy is necessary for diagnosis in cases of ulceration of hilar lymph nodes into a bronchus. The underlying cause of this lesion is usually tuberculosis, which produces erosion of the wall of the bronchus. Enlargement of nodes resulting from lymphoblastoma may produce ulceration of the wall of the bronchus with spontaneous expulsion of a portion of the node. The diagnosis of this disease has also been made by removal of a portion of the gland which was seen at bronchoscopic examination. Tuberculous nodes without calcification may protrude through the wall of a bronchus and are always located on the mesial wall of a main bronchus, bleeding readily when traumatized. Many of them are associated with pulmonary hemorrhage. The authors have not been able to prove the tuberculous nature of these lesions by examination of tissue during life, but in two instances tuberculosis of the hilar nodes was demonstrated at necropsy.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Physical Medicine, London

11: 219-242 (April) 1937

Low Intensity Short Waves (11.3 Meters): Preliminary Observations Concerning Their Effects on Living Tissues. P. P. Dalton.—p. 221.
Electrotherapy Papers: Number Two. Ultraviolet Irradiation: Technic of Application. A. P. Cawadias.—p. 225.
Electromedical Apparatus: Its Character, Operation and Care: Number One. Galvanic Current. L. G. H. Sarsfield.—p. 229.
Industrial Medicine: Modern Rheumatic Clinic. D. Stevenson.—p. 233.
Passive Vascular Exercises: Experience with the Herrmann Pavaex. O. Leyton.—p. 236.

British Medical Journal, London

1: 651-694 (March 27) 1937

Effect on Eye of Radium Used for Treatment of Malignant Disease in the Neighborhood. Philippa Martin.—p. 651.
*Isolation of Influenza Virus and Relation of Antibodies to Infection and Immunity: The Manchester Influenza Epidemic of 1937. L. Hoyle and R. W. Fairbrother.—p. 655.
Continuous Open Air for Pneumonia in Children. H. L. Wallace.—p. 657.
Auditory Nerve Section in Ménière's Disease. R. Rutherford.—p. 660.
Adrenal Cortex: Note. L. R. Broster and H. W. C. Vines.—p. 662.

Influenza Virus Antibodies.—The recent extensive epidemic of influenza has afforded an opportunity to Hoyle and Fairbrother to confirm the observation of Laidlaw and his colleagues (1933) that the disease is due to a filtrable virus. Their investigations have been directed mainly to the isolation of the virus and to determining the relation between the presence of antibodies and protection. Not only was the virus isolated from a number of cases but there was also a definite increase in the antibody titer of convalescent serums as demonstrated by complement fixation tests. In a few instances it was possible to examine the serum before and after an attack, and in each case an increased titer was recorded. The results suggest that individuals with a low antibody titer are more susceptible to infection than those with a high titer. This may be of some practical value, as recent work indicates that prophylactic vaccination may soon be available for general application. Francis and Magill suggest that this increase in circulating antibodies is accompanied by an increased ability to combat the natural infection. It follows, therefore, that if it is possible to differentiate immune from susceptible persons the application of active immunization will be assisted. The complement fixation test is the most satisfactory of the tests at present available for this purpose. A titer of 1 in 16 or over suggests a high degree of immunity, while it seems probable that titers of 1 in 4 or 1 in 8 may represent an immunity sufficient to prevent infection in a mild epidemic.

Lancet, London

1: 735-792 (March 27) 1937

Experimental Outlook in Surgery. D. Wilkie.—p. 735.
*Blood Pressure in the Years Following Recovery from Coronary Thrombosis. J. H. Palmer.—p. 741.
Acute Diffuse Nonsuppurative Encephalitis: Two Cases Described. R. L. Knaggs.—p. 745.
Hypoglycemic Shock in Treatment of Schizophrenia: Interim Report on Cases Treated at St. Bernard's (Formerly Hanwell) Hospital for Mental and Nervous Diseases. L. W. Russell.—p. 747.
*Sciatic Scoliosis. E. N. Wardle.—p. 749.
Early Bacteriologic Diagnosis of Diphtheria. W. P. Cargill and G. J. Crawford.—p. 751.

Blood Pressure Following Coronary Thrombosis.—Palmer studied the blood pressure of 212 patients who survived an attack of coronary thrombosis by at least three months. The incidence of hypertension (160 mm. systolic and/or 100 mm. diastolic) as determined by readings made before or at any time after the attack was found to be 73 per cent. More than half the patients showed hypertension during the first year. The hypertensive group included 37 per cent of those less than 50 years of age and from 78 to 84 per cent of those in the next three decades of life at the time of the attack. All except one of the twenty female patients had hypertension. The average course of the blood pressure during ten years after coronary thrombosis (not including the first month following the attack) has been plotted. The systolic pressure showed a slight rise during this period, while the diastolic showed a slight fall. The average blood pressure for the series before the attack was probably about 170/100. Although on the average the prior levels were not regained during the ten year period, they were in a few cases actually exceeded.

Sciatic Scoliosis.—Wardle tabulates and divides a series of twenty-six cases of sciatic scoliosis into two broad types, those with sciatic pain and an obvious scoliosis and those with sciatic pain in which a slight degree of lateral deviation of the spine became apparent during examination. The clinical observations in these cases oppose the theory that sciatic scoliosis is due to an arthritis of the lumbar intervertebral joints, mainly on the ground that a true arthritis should produce complete limitation of movement; it is unlikely that the symptoms would always be unilateral if arthritis were present, and that, if such arthritic edema were causing pain by compression of nerve roots, it is extraordinary that the fourth and fifth lumbar roots appear to be the only ones ever affected. The direction of the deformity may mean something in elucidating the cause of this condition, for there are two possible explanations of the muscle spasm and deformity. Irritation of the affected nerve roots by pressure could produce muscle spasm reflexly on the same side of the body as the pain, and, in the second place, an involuntary effort on the part of the patient to relieve pressure by opening up the neural foramen on the affected side would produce contraction of the muscles on the opposite side of the body to the pain—a contralateral deformity.

Medical Journal of Australia, Sydney

1: 419-456 (March 20) 1937

Prevention of Nervous and Mental Disorders: Some Possibilities and Limitations. J. F. Williams.—p. 419.
Metropolitan and Rural Incidence and Distribution of Acute Rheumatism and Rheumatic Heart Disease in New South Wales: Part II. K. Maddox.—p. 425.
Twenty Years of Medical Practice in the Valley of the Nile. J. E. Bateman.—p. 432.
*Nonepidemic Typhus: Report on Fourteen Cases Occurring on the Goldfields, Wau, Mandated Territory of New Guinea, Between Jan. 1, 1935 and June 30, 1936. R. von der Borch.—p. 435.

Nonepidemic Typhus.—Von der Borch observed fourteen cases of a nonepidemic form of typhus, which closely resembles Japanese river fever or tsutsugamushi clinically and serologically. The vector is unknown, but the suggestion is made that it is mite borne, as species of Tromiculae are commonly found on bird, beast and man. There appears to be no seasonal incidence, as cases have been scattered all through the period from January 1935 to June 1936. Fatal termination appears unlikely in robust and moderately young patients, although they may appear very ill. Elderly alcoholic subjects have a poor chance of recovery. Death ensues from toxemia, pneumonia and cardiac failure. All patients have shown a typical lesion, single in thirteen cases and duplicated in only one case. The lesion is always characterized as follows: A central, dry, circular eschar from one-fourth to one-half inch in diameter is surrounded by a dull red ring of lymphangitis approximately one-eighth to one-fourth inch wide, slightly raised above the surface of the skin. From this sometimes radiate short, dull red pseudopodia. The lesion occurred on the axilla in five cases, the calf of the leg in four, the thigh in two cases, the scrotum in two and at the waistline in one case. No cases of typhus have been observed among natives, although a careful watch has been kept. All the cases, with two exceptions, have occurred in and around Wau. The conditions under which infection has apparently occurred are similar in all cases, with the exception of three cases in women. The male patients were associated with work necessitating the clearing of virgin bush for development or prospecting purposes. The incubation time of the disease is difficult to determine, as can be well understood; but from the clear-cut history of one patient who paid a visit to a known infective area on one day only, it is apparently ten days.

South African Medical Journal, Cape Town

11: 71-102 (Feb. 13) 1937

Preparation for Examinations. R. A. Dart.—p. 71.
Social Objectives of Medical Education. J. Gillman.—p. 75.

Tubercle, London

18: 289-336 (April) 1937

Tuberculosis Problem in South Africa. Eva Morton.—p. 289.
The Cytology of Sputum. S. R. Gloyne.—p. 292.
Internal Pneumolysis: Result of 210 Consecutive Operations. F. G. Chandler.—p. 298.
Modified Pneumothorax Apparatus. W. S. Gilmour.—p. 322.

Bulletin Général de Thérapeutique, Paris

187: 465-506 (No. 10) 1937

Lobectomies and Pneumectomies. H. Descomps.—p. 465.
*New Treatment of Pulmonary Abscesses: Drainage with Double Elastic Sound. Lévy-Deker.—p. 480.
Rôle of Nasal and Pharyngeal Lesions in Etiology of Bronchiectasis and Value of Thermal Sulfur in Its Treatment. R. A. Casaubon.—p. 487.
Hydatid Cyst of Lung: Case. J. Lanos.—p. 497.

Pulmonary Abscesses.—Lévy-Deker has devised a soft sound to be introduced into the larynx, trachea and bronchi under conditions similar to those in tracheobronchial endoscopy. The small caliber of this sound permits a much deeper penetration (from 10 to 15 cm.) into the bronchial tree and makes it applicable to almost all patients. Owing to the small amount of cocaine employed, the patient sustains no shock and pulmonary infections may be drained that could not otherwise be reached with endoscopy. The sound is made of very fine rubber. It is simple for aspiration and for injection of drugs and is double for lavage. The sound is marked in two places, one at 18 cm. corresponding to the opening of the glottis, the other at 30 cm. indicating the tracheal spur. The remaining 15 cm. is for bronchial catheterization. After nasal and pharyngolaryngeal anesthesia the oiled sound is introduced through the nose until it appears below the uvula. At this moment the patient's tongue is drawn forward and the sound is inserted through the epiglottis into the larynx. The patient takes a deep breath and the sound enters into the trachea; if there is a light coughing reflex a few drops of cocaine solution will subdue it and permit the sound to enter either of the bronchi. All this is done under fluoroscopic control. For aspiration another tube with an aspirator is attached to the sound. Lavage can be performed without fluoroscopic control, the patient lying on the catheterized side and from 60 to 200 cc. of tepid physiologic solution of sodium chloride being injected. In the same manner drugs or opaque fluids may be introduced. However, in certain congestive cases weak solutions of cocaine may not be sufficient or, when the epiglottis is small, a speculum may have to be employed.

Clinique, Paris

32: 117-132 (April) 1937

Myocardial Infarcts. A. Pruche.—p. 119.
Cholesterol in Ocular Disorders: Cataract, Arcus Senilis, Glaucoma, Iritis of the Fifties, and so on. A. Cantonnet and Pétavy.—p. 125.
*Action of Normal Adult Pig Serum in Typhoid. F. Bec and J. Dulcy.—p. 126.

Pig Serum in Typhoid.—Bec and Dulcy observed that during castration of pigs no aseptic precautions are used and that the animal's peritoneum is often soiled with manure. And yet the animals do not contract any disease. There are times when many piglets fall victims to so-called hog cholera, from which the adult pigs are spared. As the symptoms of hog cholera greatly resemble those of human typhoid, the authors conjecture that pigs which have survived the disease are also immune against typhoid. Therefore they doubt whether the Eberth bacillus is the cause of typhoid. It may be merely an end result, while the real cause is a filtrable virus or a modified pathogenic colon bacillus. This is the reason why the authors insist on instituting pork serum treatment soon after the typhoid symptoms appear and never wait for serodiagnostic confirmation. They distinguish two pathogenic germs: virus and bacillus. Vaccination against the bacillus is sufficient to develop resistance. But once the disease is established, pork serum is the only recourse.

Presse Médicale, Paris

45: 505-528 (April 3) 1937

Influenza: General Review; Experimental Influenza with Ferrets and Mice. A. Béclère.—p. 505.
*Lumbar Sympathectomy: Treatment of Pott's Paraplegia. I. Jiano, Z. Iagnov and G. Timus.—p. 508.
Rôle of Corticodiencephalic and Diencephalohypophysary Correlations in Regulating Waking and Sleep. A. Salmon.—p. 509.

Lumbar Sympathectomy in Pott's Paralysis.—Encouraged by Diez's reports (1929), Jiano and his associates performed two lumbar sympathectomies in advanced cases of Pott's disease with paraplegia. Both cases showed typical motor, reflex and tactile disorders. Roentgenograms of both showed partial destruction of lumbar vertebrae. A right lumbotomy was done under ether anesthesia. The sympathetic chain was found between the vena cava and the spinal insertion of the psoas. The sympathetic is isolated by means of small tampons, the communicating branches are sectioned and the sympathetic is extirpated together with the second and third lumbar ganglions. No drain is necessary on closing. Twenty-four hours later the patient is able to move the toes and both feet. On the next day the legs can be flexed. Gradually the amplitude of the movements increases, the reflexes become lively and the Babinski reflex is negative. About two weeks after the operation, the patient can keep upright when supported and even take a few steps. After three months all functions are restored. Owing to persisting vertebral pains, an osteosynthesis was done in one case. The intervention directed against the sympathetic determines a physiologic modification in the blood provision of the spinal cord. The healing of the paraplegia is then explained by the coming into play of a system of arterial anastomoses even when the seat of the vertebral lesion is above the sympathetic level.

45: 585-608 (April 17) 1937

*Epileptic Crises from Camphor Bromide. P. Pagniez, A. Plichet and A. Varay.—p. 585.
Study of Lipidoses in Neuropathology: I. Phospholipidoses. L. Van Bogaert.—p. 587.

Epileptic Crises from Camphor Bromide.—Pagniez and his associates warn against the indiscriminate use of camphor bromide and point out its epileptogenic properties. They cite three cases in which camphor bromide was given orally for ailments other than epilepsy and in which epilepsy was never before observed. The observations are typical, with biting of the tongue and tonic and clonic convulsions, foaming at the mouth, stertor and semicoma. Injected under the form of oily solution into the peritoneum or the cerebrospinal cavity, camphor bromide shows only feeble toxicity; but given intravenously or in alcoholic solutions it may easily elicit convulsions. Muskens made similar experiments on cats and found that a dose of 0.5 Gm. increases the animal's tactile and acoustic irritability. With a higher or repeated dose it is possible to obtain a complete epileptic crisis or a fatal issue. It is likely that some persons are intolerant to camphor bromide, and therefore it is advisable to test the susceptibility of the patient with weak and fractionated doses before administering therapeutic doses.

Arch. Ital. d. Mal. d. App. Diger., Bologna

5: 507-604 (Dec.) 1936

Connection Between Liver and Transverse Mesocolon by Fibrous Adhesions: Case. E. Levi.—p. 507.
*Buffer Value of Gastric Juice of Man. P. Zorzi.—p. 520.
Contractility of Gallbladder: Experiments. G. Guidi.—p. 553.
Influence of Histamine and Acetylcholine on Gastric Secretion in Normal and Pathologic Conditions of Stomach Studied by Merklen, Kabaker and Warter's Combined Method. P. Rivasi.—p. 573.
Fecaloma of Large Intestine: Case. G. De Luca.—p. 587.
Pyloric Stenosis from Ingestion of Hydrochloric Acid: Case. R. Gatta.—p. 593.

Buffer Value of Gastric Juice.—According to Zorzi, the knowledge of the buffer value of the gastric juice is of value in studying gastric acidity, of which it is a regulating factor. The buffer factor has been known as "differential acidity" or "combined gastric acid." All gastric juices, spontaneously secreted or induced by administration of a test meal, contain buffer substances, the proportion of which depends on the amount of proteins contained in the gastric juice or in the administered test meal. The buffer value can be determined by titrating the total acidity of the gastric juice by phenolphthalein. It equals total acidity less free acidity in acid gastric juices (those with a p_H lower than 3). It equals total acidity plus acid shortage in anacid gastric juices (those with a p_H higher than 3). The author made determinations of the buffer substances of the gastric juice in 400 patients suffering from gastric disorders (cancer excluded). The buffer value is the lowest in the gastric juices removed from a fasting stomach as well as after a test meal without proteins (15 or 20 degrees of acidity). It is the highest in those which are removed after administration of Ewald's meal (70 or 80 degrees of acidity). A clinical relation between the buffer value and the gastric disturbance in a given case cannot be found. The variations of the buffer value in the gastric juice depend on

the laws of titration, the secreting activity of the stomach and the pyloric evacuation. The buffer value is given by an endogenous factor, which does not change, and an exogenous (alimentary) factor, which changes. The buffer value is an index for the functions of evacuation of the stomach of more precision than the roentgen examination of the organ. Because of its relations with the p_H of the gastric juice, it is of value in indicating the physiopathologic significance of the gastric p_H in its relation to gastric acidity.

Policlinico, Rome

44: 173-220 (April 15) 1937. Surgical Section

Pedunculated Sarcoma of Stomach with Exogastric Development: Case. R. Basso.—p. 173.
*Frequency and Importance of Certain Humoral Variations After Operations U. Bracci.—p. 181.
Multiple Visceral Lesions from Contusion of Abdomen: Clinical and Statistical Study. C. Mastrosimone.—p. 210.

Postoperative Humoral Variations.—Bracci reviews the various theories on the cause and pathogenesis of postoperative humoral variations, with especial reference to the rôle of chloremia in producing hyperazotemia. From observation of a large number of patients the author concludes that postoperative azotemia appears in about 80 per cent of the cases. As a rule it is slight, and in only a few cases is there hyperazotemia. The frequency of azotemia is related to the seriousness of the operation, and the quality (predominance of urea of pre-urea substances) depends on the organ on which the operation was done. Postoperative toxic conditions are rare. They depend on the entrance of toxic products and incomplete disintegration of proteins in the blood. Several biochemical and other factors are involved in the development of postoperative hyperazotemia. Anesthesia also plays a part, but the rôle of chloremia in producing hyperazotemia is secondary. Up to the present the appearance of humoral changes after operations cannot be predicted or prevented. Further work on the subject is advisable in order to prevent and control humoral postoperative complications.

Revista Brasileira de Leprologia, São Paulo

5: 1-132 (March) 1937

Structural Types of Tuberculoid Leprosy. Rabello Jr.—p. 1.
*Circumscribed Atrophy of Muscles of Thenar Eminence as Initial and Residual Symptom of Nervous Leprosy. N. de Souza Campos and P. W. Longo.—p. 29.
Gynecomasty in Leprosy. L. Baptista.—p. 53.
Chaulmoogra Oil in Large Doses in Leprosy. H. de Moura Costa.—p. 67.
Perforating Disease of Foot in Lepers: Treatment by Insulin and Acetylcholine. H. Guida.—p. 87.

Atrophy of Muscles of Thenar Eminence in Nervous Leprosy.—DeSouza Campos and Longo emphasize the importance of electrical examination of the muscles in the early diagnosis of nervous leprosy. According to the authors, all cases of muscular atrophy have to be subjected to electrical examination, which is the best topographical method for the diagnosis of nervous leprosy as well as for determining the evolution of the disease. They report five cases of atrophy circumscribed to the muscles of the thenar eminence as a symptom, early or late, of leprosy of the ulnar nerve. From their clinical study as well as from a review of the knowledge on the anatomy of the hand, the authors conclude that in their cases only the terminal motor branches of the ulnar nerve and the interosseous posterior nerve were involved in the leprous degenerative process.

Jahrbuch für Kinderheilkunde, Berlin

149: 1-80 (April) 1937

Lobar Pneumonia in Children. G. Joppich.—p. 1.
Stomatitis and Infectious Diseases. H. Zischinsky.—p. 40.
*Defense Powers Against Infections in Young Nurslings and Critical Evaluation of Therapy of Erysipelas. G. Cosack.—p. 53.
Acute Insufficiency of Adrenal Cortex After Scarlet Fever. J. W. Camerer.—p. 66.

Defense Powers of Nurslings Against Infections.—Cosack points out that the unique position of the defense powers of young nurslings is reflected in the therapy. It is observed again and again that the young organism reacts differently from the adult organism to therapeutic measures, which aim to increase or support the defense powers. As an example the author chooses the therapy of erysipelas, the most acute disease of young nurslings. He shows how various therapeutic measures exert a different effect in nurslings and in adults. Whereas, for instance, serotherapy and irritation therapy fail in the youngest nurslings, blood transfusion seems to be especially suited for the organism of nurslings. By means of a preparation for irritation therapy, it was demonstrated that the nonspecific defense power is weak in young nurslings. It was possible to differentiate three developmental phases of internal maturation. In the new-born phase, the humoral as well as the cellular defense mechanisms have only a slight reactivity. This phase has been termed that of physiologic areactivity. The second phase comprises the age of young nurslings and it is chiefly characterized by strong leukocytic reactions. During the third phase, which includes the older nurslings and young children, the humoral defense mechanisms reach their full development while the cellular ones decrease constantly. In adults the latter disappear completely and leave the field entirely to the purely humoral reactions.

Zeitschrift für Kinderheilkunde, Berlin

58: 581-684 (March 20) 1937. Partial Index

Limits of Normality in Urology During Childhood. A. Oberniedermayr.—p. 581.
*Further Investigations on Active Immunotherapy of Whooping Cough. W. Keller.—p. 591.
Biologic Value of Some Milk-Free Eczema Diets. J. Brock and H. Röntsch.—p. 612.
*Treatment of Pneumonia in Children with Fresh Air Stimuli (Air Changes). J. Jochims.—p. 620.
Clinical Aspects of Arachnodactylia and Indications of Its Hereditary Character. H. Fischbach.—p. 630.
Allergometric Studies on Tuberculin Allergic Children. A. von Chwalibogowski.—p. 659.

Immunotherapy of Whooping Cough.—Keller recorded in curves the coughing attacks and the antibody content of sixty-three children with whooping cough, forty-three of whom had been treated with a whooping cough vaccine and twenty of whom had not been vaccinated. The antibody content was determined by means of the complement fixation reaction. In the children who had not been vaccinated, the comparison of the two curves revealed that neither the antibodies in the blood nor those in the tissues are the cause of the hygiogenetic processes and consequently of the cure. But although the antibodies as such are of no importance for the essential process of hygiogenesis, the peak in the antibody curve indicates the onset of the curative process. In the children who had been vaccinated, the following observations were made: 1. The specific antibodies that are produced by vaccination and demonstrable by the complement fixation test are identical with those that are formed during the spontaneous infection. 2. The formation of antibodies, which is elicited by the vaccination of whooping cough patients, is so rapid that the appearance of the antibodies in the blood in many cases has not the same significance as in the children who have not been treated with the vaccine. 3. In view of the observations on those who had not been given vaccine, the vaccination can be pronounced as efficacious only if the peak of the antibody curve and the subsidence of the attacks of coughing concur. This apparently takes place if the vaccine is administered after the cough has already appeared, for in spite of the relatively late vaccination the peak of the antibody curve is reached earlier than in those who have not been vaccinated and the spontaneous hygiogenetic processes are accelerated. 4. If the vaccine is administered after the antibody titer has reached spontaneously a high level, a considerable although temporary reduction in the titer usually takes place immediately. 5. In case of complications with other disorders, such as pneumonia or bronchitis, and in young nurslings, the treatment with vaccine fails. 6. Prophylactic vaccination, even if it produces a high antibody titer and is performed long enough before the infection, proves inadequate to prevent whooping cough. 7. Although the therapeutic use of whooping cough vaccine is limited, its complete rejection is not justified.

Treatment of Children with Pneumonia.—According to Jochims, the fresh air treatment of young children with bronchopneumonia has gained favor in recent years. There are cases in which prolonged exposure to fresh air causes renewed impairment of the circulation or even collapse and also disturbances in the general condition. The author reasoned that

this might be avoided if, after several hours' exposure to the cold fresh air, the child was brought again into a warm room and then again into the cold fresh air. This led him to the development of the treatment by air stimuli, that is, by changes between cool fresh air and warm room temperature, the change being made at intervals of six hours. This treatment was employed in twenty-six children. It is important that the change from one temperature to the other is made quickly, for the cold air must exert a stimulus on the skin; it should produce a noticeable reduction of the cutaneous temperature. On the whole, the important factor is not so much the absolute temperatures, but rather the extent of the difference. After the children are brought from the lower temperature into the warm room, the cheeks show a better blood perfusion, which lasts several hours and is indicated by the reddish color of the skin as well as by the cutaneous temperature. The temperature of the cheeks increases as much as 4.8 degrees C. above the initial value. The treatment with air stimuli or air changes is used with good results in children with bronchopneumonia. However, it is contraindicated in premature births and in nurslings with a still inadequate temperature control. Children who are in collapse or those in whom collapse threatens are likewise unsuited for exposure to cold air. In children with latent spasmophilia, the air stimuli should be employed only with extreme caution.

Wiener medizinische Wochenschrift, Vienna

87: 457-480 (April 24) 1937

*Pathology of Hypophysial Disorders. W. Falta.—p. 457.
Does Present-Day Scientism and Etatism Involve Dangers for Surgery? A. Jirásek.—p. 458.
Diabetes in Children. R. Wagner.—p. 461.
Illegitimately Begotten, Legitimately Born Children. R. Hofstätter.—p. 464.

Pathology of Hypophysial Disorders.—Falta criticizes Erdheim's opinion regarding partial hyperpituitarism. He does not deny that acromegaly is the result of a hyperfunction of the eosinophilic cells, but he questions whether the growing eosinophilic tumor by its pressure on the other types of cells of the adenohypophysis complicates the partial hyperpituitarism by hypopituitarism and whether this explains the later development of cachexia and genital impairment. He points out that this assumption is contradicted by the fact that in the initial stage of many cases of acromegaly there exists an increase in the genital function and that this function frequently is retained to the late stages of the disease. Moreover, if acromegaly is accompanied by a disturbance in the genital function, this disorder is of a different nature than is the case in hypophysial cachexia, which represents the opposite of acromegaly and is probably caused chiefly by the abolishment of the function of the eosinophilic cells. The cachexia that develops in the later stages of typical acromegaly differs from the cachexia that develops in case of destruction of the anterior lobe of a hypophysis. Then there is a combination of acromegaly with eunuchoidism; but even in this case the eunuchoidism is not produced, as assumed by Erdheim, by a pressure of the growing eosinophilic tumor on the other types of cells of the adenohypophysis but is rather an independent entity. The author is convinced that eunuchoidism as such has no connection with the hypophysis but is the result of a defective primordium of the trophic center of the gonads in the hypothalamic region. Further he takes up Cushing's syndrome, calling attention to the fact that the pathologic anatomy does not provide an adequate explanation, for there are cases with basophil adenomas in which Cushing's syndrome does not develop. On the other hand, a case has been described in which there was not only an increase in basophilic cells of the anterior pituitary, but basophilic cells were found disseminated from there into the hypothalamic region and were detected also in the adrenal cortex and in the kidneys. In discussing the various functions of the hypophysial hormones the author stresses that the action on the metabolism should not be overlooked. In the conclusion he expresses the opinion that it is not necessary to differentiate between anterior hypophysial substances that have been extracted from pregnancy urine and the extracts of the anterior lobe of the hypophysis. He found that with a substance extracted from pregnancy urine it was possible to produce nearly all the effects which can be produced with the various extracts obtained by different methods from the anterior lobe of the hypophysis, such as the action on the basal metabolism, the anti-insular action, the gonadotropic action and the growth promoting action. He suggests that the numerous substances obtained from the anterior pituitary by various methods of extraction might be derived from one basic substance.

Hospitalstidende, Copenhagen

80: 281-312 (March 16) 1937

Birth Rate, Growth, Morbidity and Mortality Seen in Relation to Yearly Seasons. C. Schiøtz.—p. 281.
*Bilateral Extra-Uterine Pregnancy. A. Jessing.—p. 306.

Bilateral Extra-Uterine Pregnancy.—Jessing reports the case of a woman, aged 42, with two extra-uterine pregnancies at an interval of two years. He says that larger statistics show a recurrence of extra-uterine pregnancy in about 10 per cent, while the frequency of normal gravidity after operation for extra-uterine pregnancy is about 50 per cent. Removal of the nongravid tube in operative treatment of extra-uterine pregnancy therefore does not seem to him justifiable unless the nongravid tube is the seat of grave anatomopathologic changes.

80: 313-356 (March 23) 1937

*Deep Otogenic Inflammation of Temporal Bone: Petrositis. R. Lund.—p. 313.
Pseudoparasites. V. Jensen.—p. 348.
Morgagni's Syndrome (Hyperostosis Frontalis Interna, Virilitas, Obesitas). P. Levison.—p. 352.

Deep Otogenic Inflammation of Temporal Bone.—Lund discusses simple petrositis and osteitis of the petrous portion of the temporal bone on the basis of fifty-four cases comprising thirty-eight cases of acute or subacute suppuration of the middle ear, thirteen of simple chronic and three of cholesteatomatous suppuration. In the fifty-four cases eighty-nine foci were emptied, fifteen anterior and seventy-four posterior, the greater number of interventions on the posterior foci being partly due to their easier accessibility. The main symptom in deep osteitis is pain, differing in character and location from the usual ear pain. It is generally neuralgic, most often violent. The most common localization is one or more of the fields of the trigeminal branches. In thirteen cases in children under the age of 10 years, there was no definite statement as to pain. In part of the second group of twenty-four adults there was pain, sometimes violent, but indefinite. In the third group of nineteen patients, typical petrositis pain was established; fourteen of these had acute suppuration of the middle ear, the typical pain appearing in eleven during the first days of the suppuration and in three on the seventeenth, the thirteenth and the forty-first day, respectively. These pains cease spontaneously or after the operation on the ear, permanently in many cases; in others they recur. When the field of all three trigeminal branches is affected, the presence of a disturbance of the gasserian ganglion is likely; it is certain if disturbances in sensitivity are established also in the trigeminal fields. The neuralgic pain in the orbits, emphasized in the literature, occurred in only four cases, in two of which the apex was affected. In three cases there was no orbital pain in spite of total petrositis. In emptying focus VI, especially when the osteitis continues into focus III, which is frequent, the facial nerve is sometimes laid bare above the styloid foramen, usually, without lesion of the nerve, causing a postoperative paralysis of the facial nerve as seen in six cases. The prognosis is favorable. In nineteen cases there was pronounced disorder of the labyrinth, with complete destruction of the labyrinth in seven and fistulous breaking through to the labyrinth in two. In case of labyrinthine disturbance during the course of suppuration of the ear, every effort should be made to determine whether or not petrositis is present. If apicitis is not diagnosed before paralysis of the abducent nerve is manifest, the case will often be one of marked meningitis. Petrositis in the early course of suppuration of the middle ear, without actual osteitis, has a tendency to spontaneous recovery. Even at a later stage, when there is true osteitis in the temporal bone, i. e., from the third to the sixth week, when operation on the mastoid process is indicated, the prognosis is good without deep intervention. In the subacute stages of the osteitis the disorder is so variable in localization and extent that the prognosis is uncertain. In the first stage of acute petrositis, paracentesis often results in recovery.